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**Ontario Geological Survey
Open File Report 6075**

**Kimberlite and Base Metal
Exploration Targets,
Derived from Overburden
Heavy Mineral Data,
Longlac Area,
Northwestern Ontario**

2002



ONTARIO GEOLOGICAL SURVEY

Open File Report 6075

Kimberlite and Base Metal Exploration Targets, Derived from Overburden Heavy Mineral Data, Longlac Area, Northwestern Ontario

by

T.F. Morris, S.R. Slattery, S.A. Pitre, T.M. Larose and L. Semanya

2002

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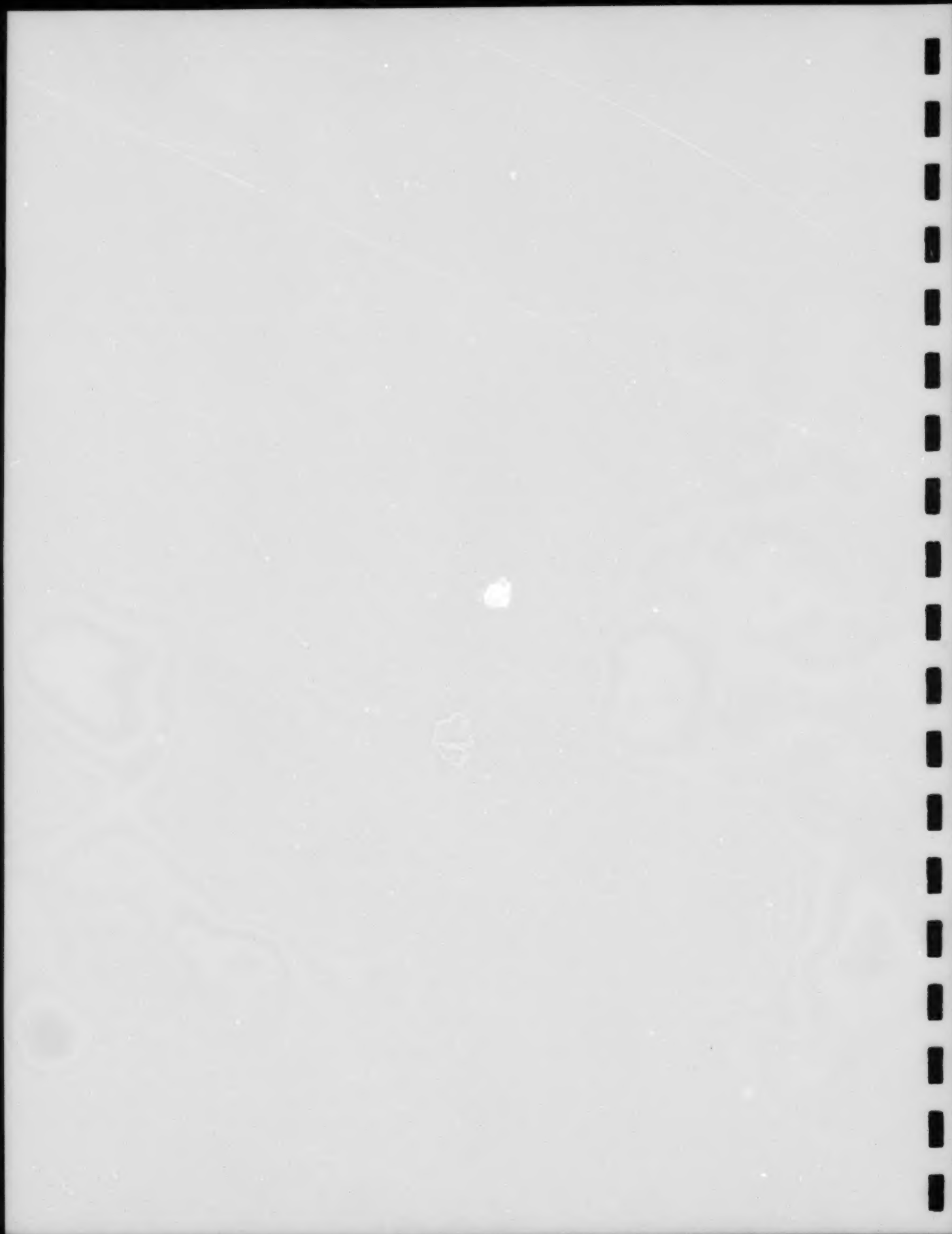
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*Available separately from report. See page xiii.

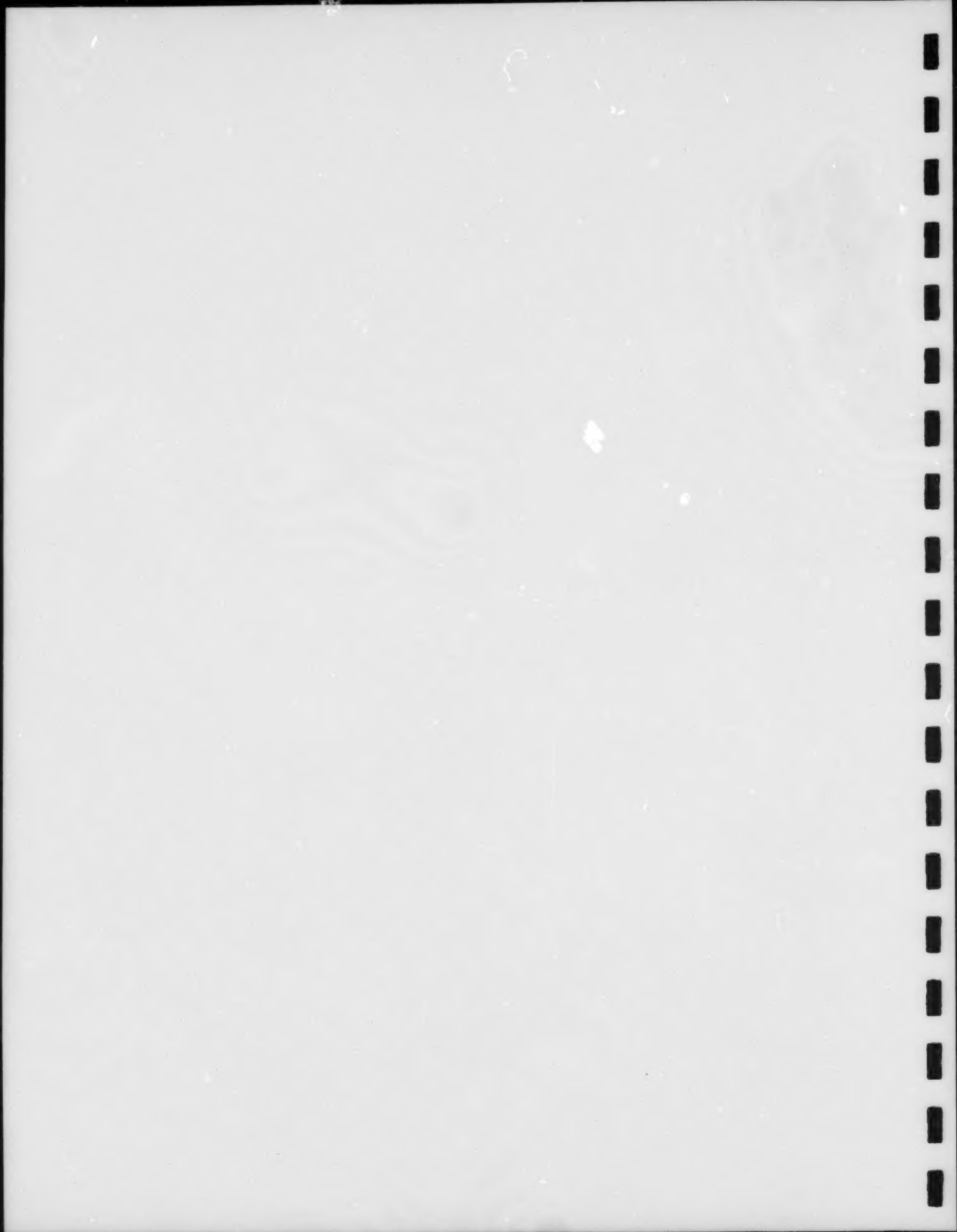


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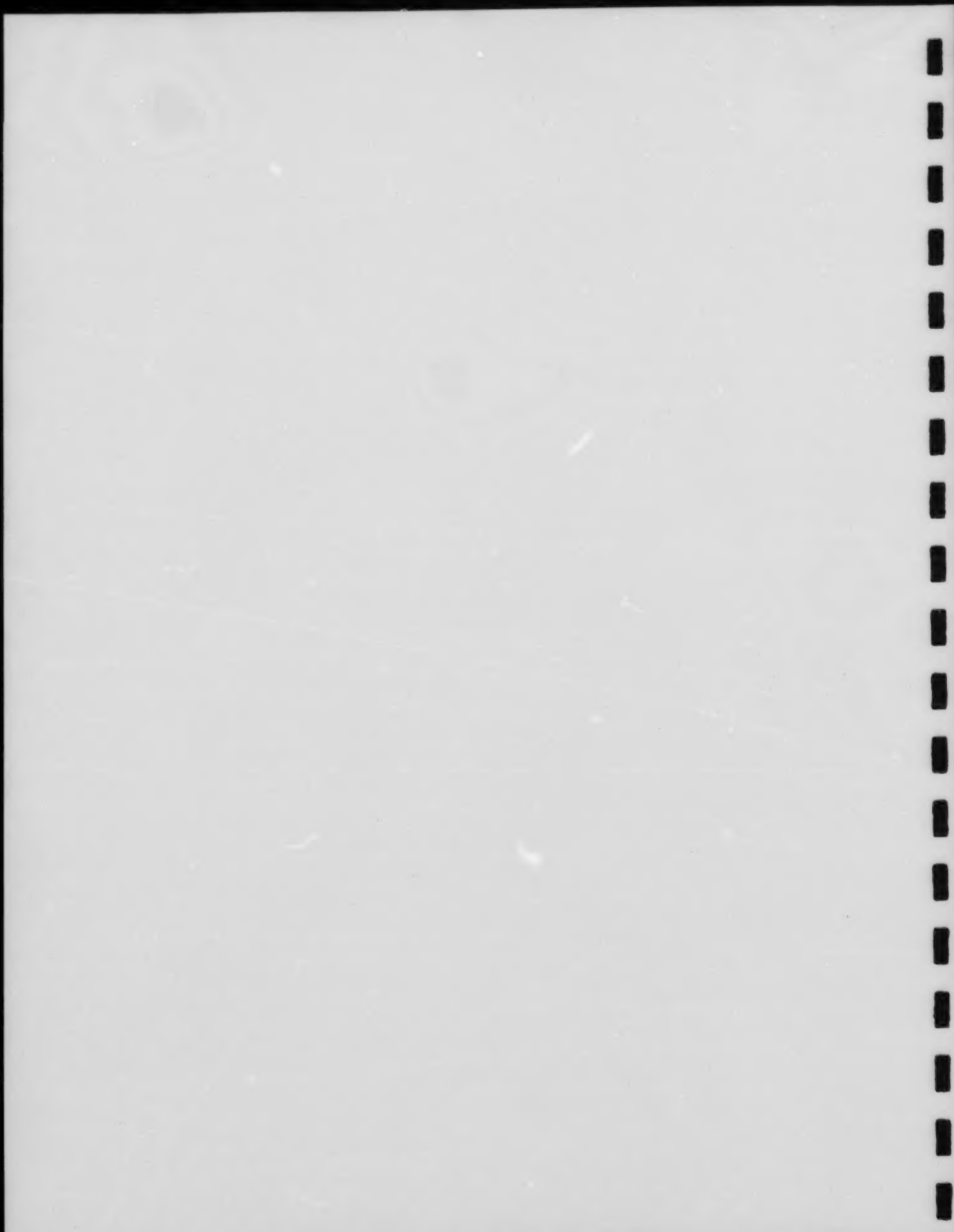
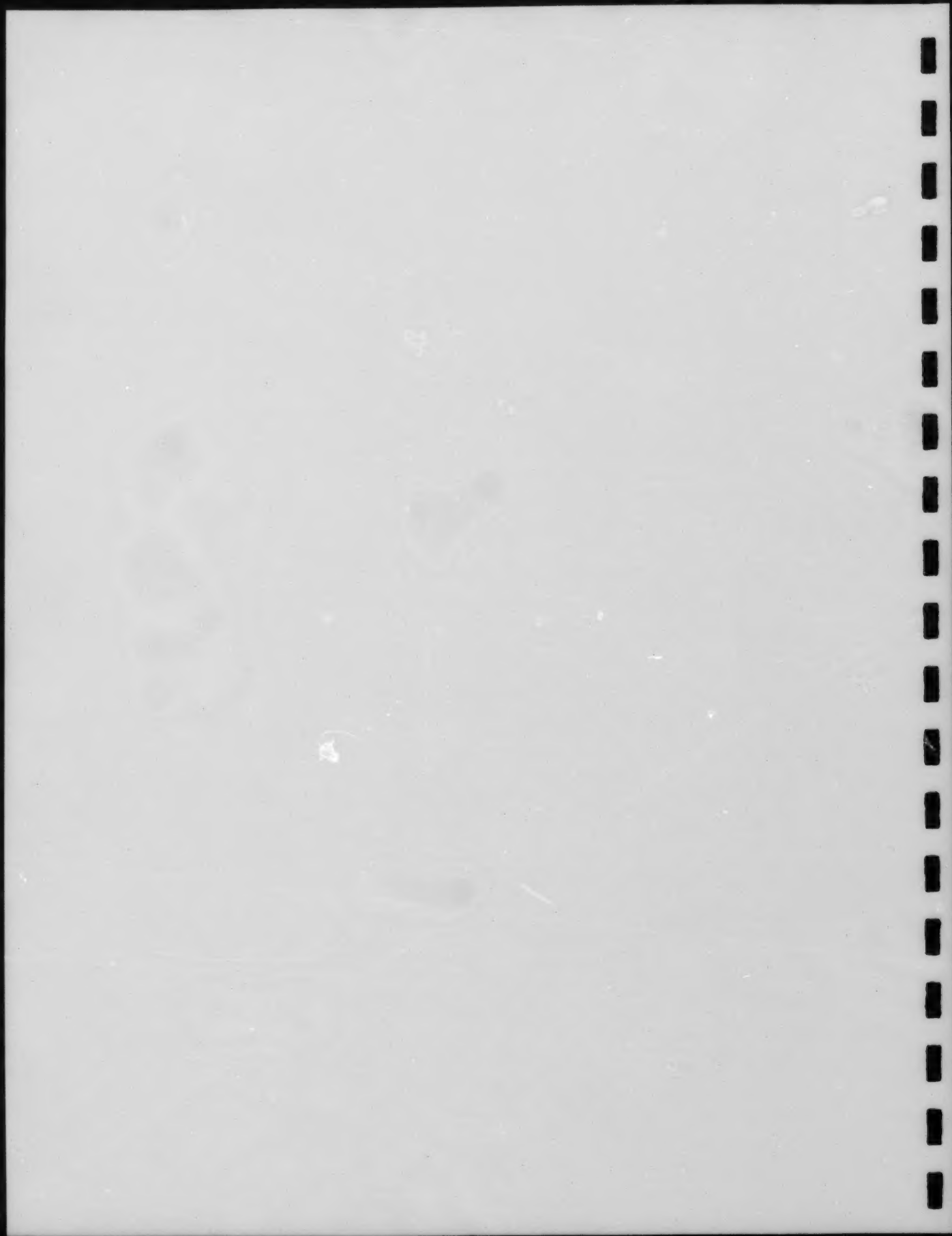


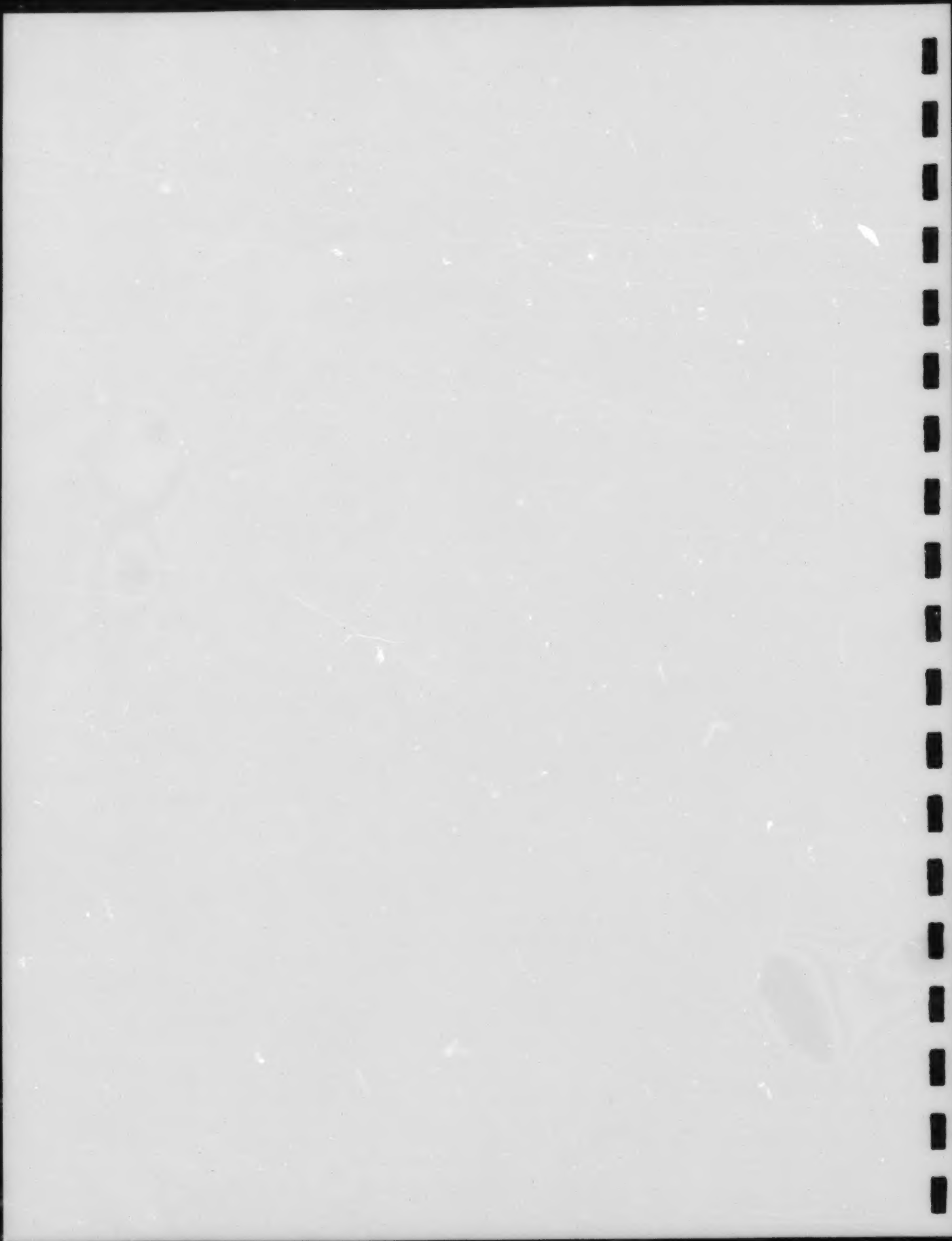
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***Miscellaneous Release-Data 97**

Data release of kimberlite and base metal exploration targets, derived from overburden heavy mineral data, Longlac area, northwestern Ontario; by T.F. Morris. This release consists of data related to kimberlite indicator minerals, metamorphic or magmatic massive sulphide indicator minerals, gold grains and carbonatite indicator minerals from modern alluvium and till samples collected in an area north, east and southeast of Longlac, northwestern Ontario. The data are being released in conjunction with Open File Report 6075. Files on this release include: definitions of abbreviations used; Overburden Drilling Management Limited cover letters (these two files are in Microsoft Word (.doc) and Rich Text Format (.rtf)); sample site locations; sample processing data; detailed gold grain summary; kimberlite indicator minerals; kimberlite indicator mineral picking comments; metamorphic or magmatic massive sulphide indicator minerals; heavy mineral assemblage remarks and summary of picked grains; summary of microprobe data; pebble lithology data (these files are in ASCII (.txt), Microsoft Excel (.xls) and comma delimited (.csv) formats); and photographs of Cr-pyrope garnet grain shapes (in Microsoft Power Point '97 (.ppt) format).

These files are on 1 CD-ROM, available separately from the report.



ABSTRACT

This report provides data and preliminary interpretations on the types and distribution of kimberlite indicator minerals (KIMs), metamorphic or magmatic massive sulphide indicator minerals (MMSIMs^{®*}), gold grains and carbonatite indicator minerals recovered primarily from modern alluvium, as well as subglacial tills, coarse-grained glaciolacustrine and glaciofluvial deposits, eskers and recessional moraines. These materials were collected in the Longlac area of northwestern Ontario. This data can be used to focus exploration efforts for kimberlite (diamonds), base metal, gold and carbonatite (rare earth element) deposits. A total of 249 modern alluvium, 91 subglacial till and sediment samples from 11 eskers, 7 glaciolacustrine and 3 glaciofluvial deposits and 4 recessional moraines were collected from across the study area.

In addition to the regional survey, 2 orientation surveys were completed. The first orientation survey was completed to establish a base line for a gold heavy mineral signature associated with gold mineralization. Data from such a study is useful in evaluating gold grain values from the regional survey. The purpose of the second orientation survey was to validate significant, anomalous KIM values, recovered from a modern alluvium and a subglacial till sample collected within close proximity. Within the KIM orientation survey, several additional samples were collected in an effort to establish any local distribution of KIMs which might focus exploration on a specific kimberlite target.

Three areas and 11 individual sites are proposed for kimberlite exploration in the Longlac area. The suggested targets are based on the recovery of important indicator minerals such as 2 "G10" Cr-pyropes, one Group I eclogite garnet, 2 inclusion field chromites, chromites with chemistry that suggests they are exclusive to kimberlite, plus the distribution and concentration of other KIMs.

Defining exploration targets for base metal is more difficult as the distribution of MMSIMs[®] are widespread, the number of grains generally low and the types of MMSIMs[®] within samples in any given area are highly variable. This is reflected in the number of potential areas (9) and individual sites (8) proposed as exploration targets.

Very few gold grains and indicator minerals for rare earth element carbonatite were recovered from overburden samples. Nonetheless, 4 areas and 8 individual sites are highlighted as potential gold exploration targets. No rare earth element exploration targets are proposed due to the very low number and wide dispersal of related indicator minerals.

*MMSIM is a registered trademark of Overburden Drilling Management Limited, Nepean, Ontario.



INTRODUCTION

Study Location

The study area is located 210 km west of Hearst and 38 km east of Geraldton in northwestern Ontario and includes the town of Longlac (Figure 1). The study area is covered by 1:50 000 scale, National Topographic System maps which include: the north half of the Longlac (42 E/15) sheet, bounded by latitudes 87°00' and 86°30' and longitudes 50°00' and 49°52'; the Castlebar Lake (42 E/16) sheet, bounded by latitudes 86°30' and 86°00' and longitudes 49°45' and 50°00'; the Pagwachuan Lake (42 E/9) sheet, bounded by latitudes 86°30' and 86°00' and longitudes 49°30' and 49°45'; and the north half of the Kagiano Lake (42 E/8) sheet, bounded by latitudes 86°30' and 86°00' and longitudes 49°30' and 49°22'.

Project History and Purpose

The Ontario Geological Survey (OGS) has defined several important kimberlite exploration targets over the Kapuskasing Structural Zone (KSZ) through a series of overburden mapping and sampling programs (Morris, Murray and Crabtree 1994; Morris, Crabtree and Pianosi 1997; Morris, Crabtree and Averill 1998; Morris et al. 1998; and Stephenson, Morris and Crabtree 1999) (Figure 1). Kimberlite is the rock type most commonly associated with hosting diamond (Morris and Kaszyki 1997). To define kimberlite exploration targets, overburden samples are processed to isolate kimberlite indicator minerals (KIMs). KIMs are heavy minerals (specific gravity greater than 3.2) that are closely associated with kimberlite. These minerals include Cr-pyrope garnet, chromite, Mg-rich ilmenite, Cr-diopside and forsteritic olivine.

As well, other areas of the Province have been evaluated by the OGS for kimberlite potential through overburden sampling programs (Tardiff 2000; Allan 2001; Ontario Geological Survey 2001a, 2001b, 2001c, 2001d; Stone 2001). One of the study areas included part of the Trans Superior Tectonic Zone (TSTZ), a belt of rock extending from Michigan, across Lake Superior and into Ontario (Figure 1).

The geology of the TSTZ is favourable to host kimberlite in that it is a fault system that has accommodated the emplacement of mantle material and has mantle-root friendly structures (such as dike swarms) indicating conditions favourable for diamond preservation. This is supported by the presence of kimberlites within Michigan (Cannon and Mudrey 1981) and the presence of ultramafic lamprophyres, which belong to the kimberlite "clan" of rocks (Rock 1990) in Ontario (Sage 1999).

Directly west (Beardmore-Geraldton area) of the present study area, KIMs were recovered from overburden samples, suggesting the presence of kimberlite there (Thorleifson and Kristjansson 1993). South of the present study area, 2 overburden mapping and sampling programs were completed over the TSTZ along the north shore of Lake Superior during the summers of 1999 and 2000 (Morris et al. 2000; Morris 2001;

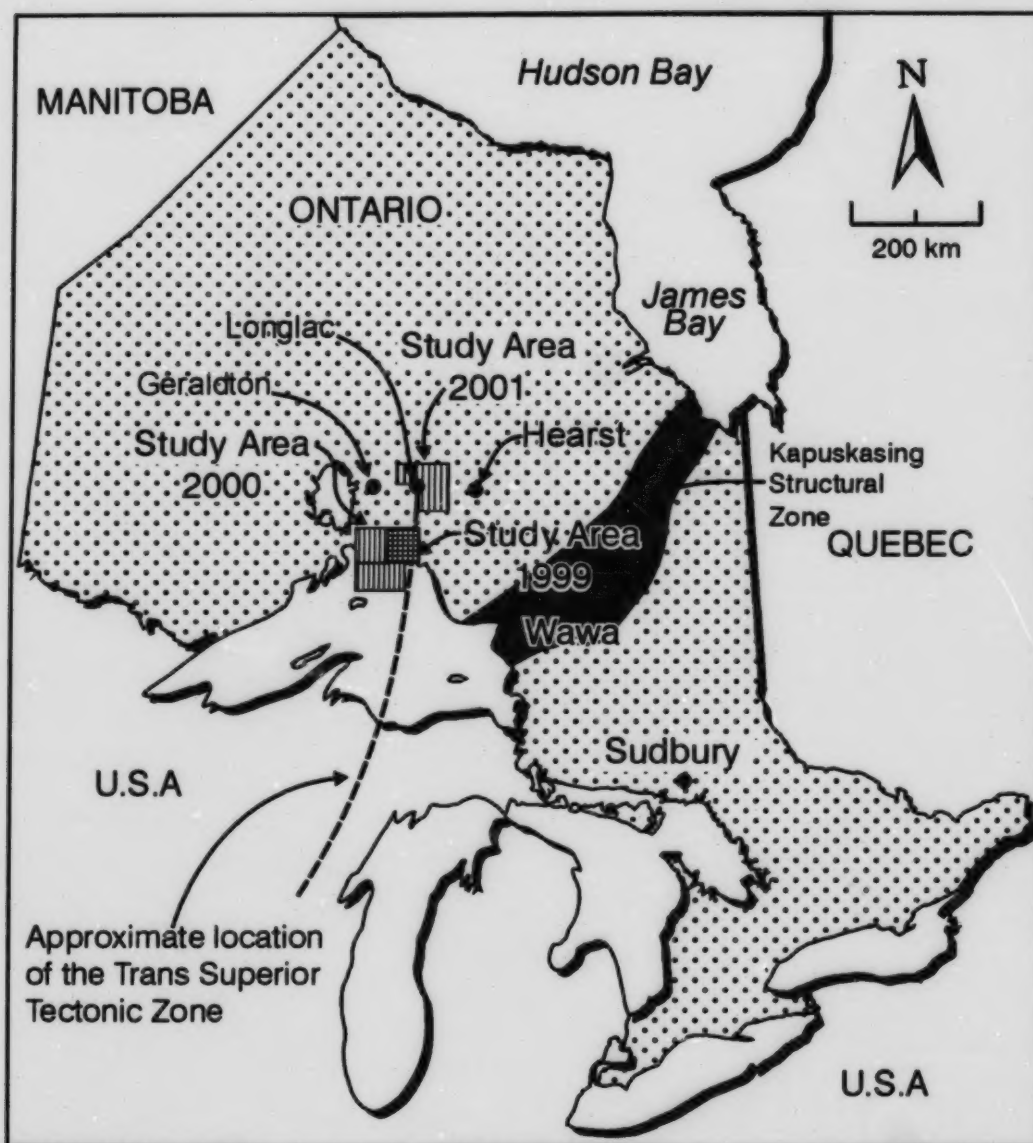


Figure 1. Study area location (Slattery and Morris 2001).

Morris, Pitre and Larose 2002; Figure 1). Again, these programs were successful in identifying excellent kimberlite exploration targets based upon the recovery of KIMs and favourable geochemistry of overburden samples.

In addition to KIMs, overburden samples from the 1999 and 2000 field seasons were processed for metamorphic or magmatic massive sulphide indicator minerals (MMSIMs[®]), gold grains and carbonatite indicator minerals (Morris et al. 2000; Morris, Pitre and Larose 2002). The MMSIMs[®] are associated with 3 main types of base metal deposits: 1) volcanosedimentary massive sulphides in high grade regional metamorphic

terrain; 2) skarn and greisen deposits; and 3) magmatic Ni-Cu sulphides (Averill 1999). The composition of gahnite, a rare and important MMSIM[®] associated with metamorphosed volcanosedimentary massive sulphide deposits, is also used to indicate the presence of rare-element pegmatite (Morris et al. 1997).

Two hundred and forty-nine modern alluvium, 91 till, 4 recessional moraine, 3 glaciofluvial, 7 glaciolacustrine and 11 esker samples were collected and submitted for heavy mineral processing. This report summarizes the types, concentrations and distribution of KIMs, MMSIMs[®], gold grains and carbonatite heavy minerals recovered from these different overburden materials. Recommendations for kimberlite and base metal exploration are proposed. The data are summarized in digital format (Morris 2002) and consists of the following: a) 2 text files stored as Microsoft Word (.doc) and Rich Text Format (.rtf) files; b) 10 sets of numerical data stored as ASCII (.txt), Microsoft Excel (.xls), and comma delimited (.csv) files; and c) one Microsoft Power Point '97 (.ppt) file:

Intro	(.doc)(.rtf)	Definitions and Abbreviations
Appendix 1	(.txt)(.xls)(.csv)	Sample Site Locations
Appendix 2	(.txt)(.xls)(.csv)	Laboratory Sample Log
Appendix 3	(.txt)(.xls)(.csv)	Table Concentrate
Appendix 4	(.txt)(.xls)(.csv)	Raw Gold Data
Appendix 5	(.txt)(.xls)(.csv)	Kimberlite Counts
Appendix 6	(.txt)(.xls)(.csv)	Kimberlite Comments
Appendix 7	(.txt)(.xls)(.csv)	Metamorphic or Magmatic Sulphide Indicator Minerals
Appendix 8	(.txt)(.xls)(.csv)	Metamorphic or Magmatic Sulphide Indicator Mineral Remarks
Appendix 9	(.txt)(.xls)(.csv)	Heavy Mineral Geochemical Data
Appendix 10	(.doc)(.rtf)	Overburden Drilling Management Limited Cover Letters
Appendix 11	(.txt)(.xls)(.csv)	Pebble Lithology Data
Appendix 12	(.ppt)	Cr-pyrope Garnet Grain Shapes

Physiography

The study area straddles the Great Lakes-Hudson Bay drainage divide. Water flows north into James Bay from Burrows, Chipman, Fernow and Pagwachuan lakes through the Kenogami and Fernow rivers. South of the drainage divide, water flows south to Lake Superior through the Pic River.

The study area lies within the Abitibi Uplands subregion of the James physiographic region (Bostock 1976). This region is underlain by crystalline Archean bedrock and characterized by a broad rolling surface that rises gently from the Hudson Bay Lowland. Bedrock relief is generally low to moderate, seldom exceeding 60 m (Gartner 1979).

REGIONAL GEOLOGY

Bedrock Geology

The Precambrian geology of the Longlac area has been described and mapped in detail by Pye, Harris and Fenwick (1966), Innes and Ayres (1971), Kresz (1989) and Kresz and Zayachivsky (1989) (Figure 2). The study area lies within the Wabigoon and Quetico subprovinces of the Superior Province. Within the study area, rocks of the eastern Wabigoon are associated with the Elmhirst-Castlewood-Klotz greenstone belt of Archean age. This belt is aligned easterly and is characterized as a greenstone septa surrounded by granitoid units. The greenstone belt consists of massive, pillowed, amygdaloidal and variolitic flows of magnesium to iron tholeiites (Mason and White 1986). The granitoid units are transected by the Nipigon Embayment (Blackburn et al. 1991).

Rocks belonging to the Elmhirst-Castlewood-Klotz greenstone belt have been intruded by late intrusive (Neo- to Mesoarchean) diorites, granodiorites, quartz-diorites, monzonites, feldspar porphyrys, quartz-porphyrys and pegmatites (Mason and White 1986).

The Quetico subprovince lies south of the Wabigoon subprovince. The Quetico consists of Neo- to Mesoarchean intrusive and supracrustal rocks comprising a gneissic tonalite suite, muscovite-bearing granites, massive granite to granodiorite and a metasedimentary suite.

Proterozoic diabase dikes intrude all rock types associated with both subprovinces. Metamorphic grade is commonly greenschist but ranges to amphibolite facies (Speed and Craig 1992).

The study area includes faults associated with the TSTZ, a prominent structural feature that extends north-northeast from Michigan where several kimberlites occur. This tectonic zone was emplaced between 1.0 to 1.2 Ga (Sage 1991).

Overburden Geology

All glacial landforms and related materials within the study area were likely deposited during the last Wisconsinan glaciation. Previous overburden mapping encompassing the study area has been completed at different scales by Prest et al. (1968, 1:5 000 000), Barnett et al. (1991, 1:1 000 000), Zoltai (1965, 1:506 880) and Gartner (1979, 1:100 000). Specific studies or observations on local Quaternary geology features and landforms were reported by Zoltai (1967).

Direction of ice flow is defined by the orientation of striae, grooves, chattermarks and streamlined bedrock forms. Most of these features exhibit an orientation between 215° to 227°, indicating a regional flow to the southwest. Two sets of striae, having

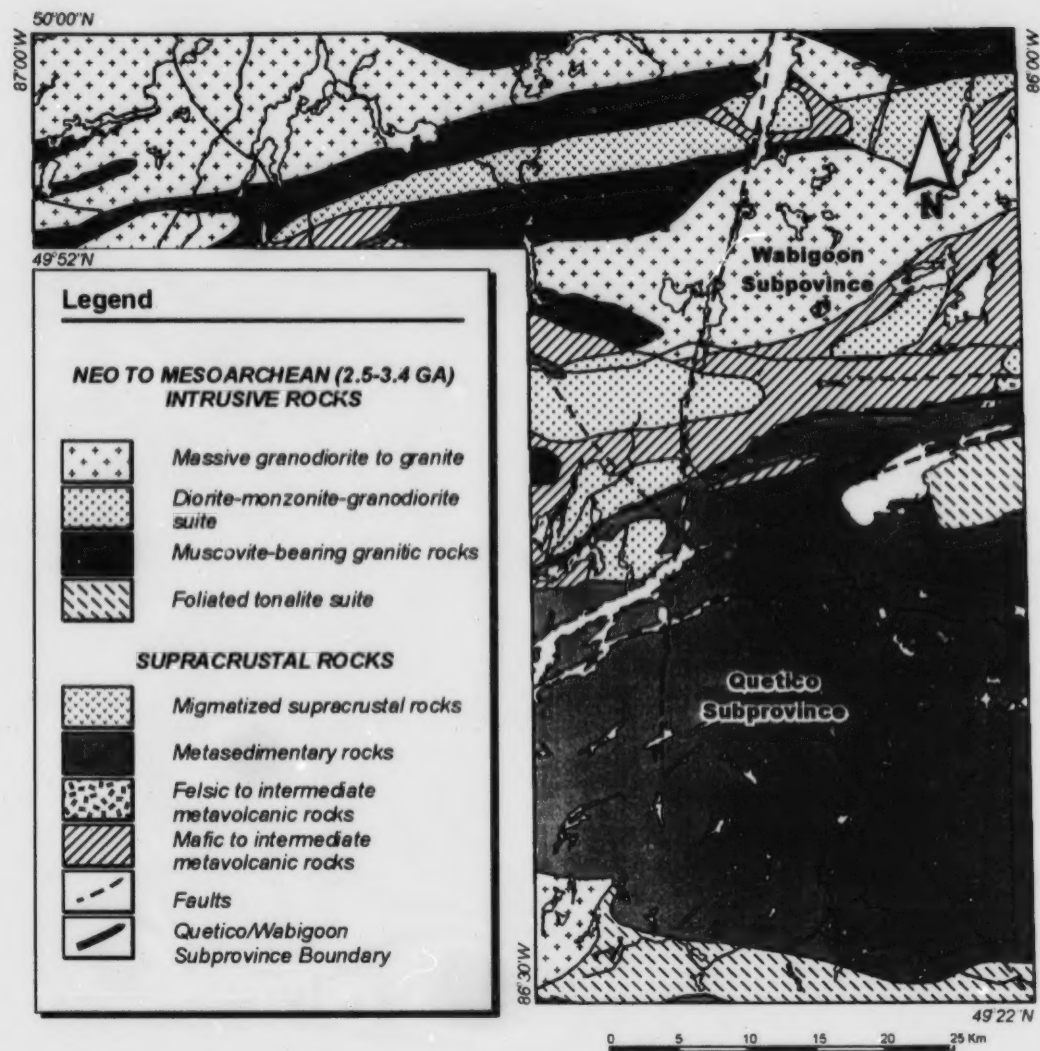


Figure 2. Bedrock geology of the Longlac area (from Ontario Geological Survey 1991).

different orientations, were observed at 2 locations in the northern part of the map area. There, the pervasive regional southwest orientated striae were abraded from the outcrop surface by flow to the south at 190° .

Much of the till within the study area consists of a thin, subglacially derived material with a carbonate-rich matrix. The clast lithology of this till is comprised of clasts from local sources and from the Hudson and James Bay lowland. A less pervasive, locally derived, non-calcareous till is also present. This till is primarily confined to topographically high areas such as bedrock knobs and ridges.

Landforms and deposits associated with glacial retreat are found throughout the study area. Ice-contact stratified drift is common and is associated with deltaic sequences, recessional moraine, dead-ice topography, eskers and valley fill. Ice-contact stratified drift commonly consists of flow till (with well-developed flow structure) and poorly sorted pebbly sand containing a variety of clast types (including local material and Hudson Bay area derived Paleozoic clasts). The matrix of this material is carbonate-rich reacting strongly with 10% HCl. Several prominent eskers, representing former subglacial conduits that supplied sediment to 3 deltas, occur northwest of Raynar Lake, south of Chipman Lake and southwest of Taffy Lake (NTS sheet 42 E/16). Sections through these eskers reveal well-sorted pebbly sand and coarse gravel.

Glaciofluvial deposits consisting of well-sorted sands to coarse boulders of predominantly local provenance, were identified within several narrow valleys. Glaciolacustrine materials were deposited within 2 different environments. First, and primarily within the Pagwachuan Lake map area (42 E/9), shallow, short-lived proglacial lakes formed between the receding ice margin and topographically higher ground. Material associated with these lakes includes fine- to medium-textured sand. Second, and primarily within the northern part of the Castlebar Lake map area (42 E/16), very fine sand and varved silts and clays were deposited within Glacial Lake Barlow-Ojibway. West of Pagwachuan Lake, water from a proglacial lake spilled over the drainage divide into McKay Lake, then drained south to Lake Superior through the Pic River valley. Post-glacial features such as colluvium, modern shoreline features (such as bars and spits), eolian features (sand dunes), modern alluvium and organic deposits were observed.

METHODS

Material Sampling

Two hundred and forty-nine modern alluvium samples were collected for heavy mineral analysis. Other overburden materials collected for the same type of processing include samples of subglacial till (91), eskers (11), glaciolacustrine (7) and glaciofluvial sediments (3) and recessional moraines (4).

Sample numbers and types, the bedrock type over which the sample was taken and locations (UTM coordinates, NAD 27 projection, Zone 16) are summarized in Appendix 1 (this report) and in Morris (2002, Appendix 1).

Modern alluvium was chosen as the primary sampling media as it provides a means to gain a fast, relatively inexpensive heavy mineral signature for individual drainage basins. The heavy mineral signature obtained from modern alluvium is a

product of the weathering of both bedrock and overburden, and the subsequent erosion and deposition of the eroded material. A more detailed discussion of the controls on these processes can be found in Morris, Murray and Crabtree (1994), Morris (1995) and Morris and Kaszycki (1997). It is important to note that lakes within drainage basins act as sediment traps, restricting the down drainage transport of heavy minerals. Therefore, when modern alluvium sites were chosen for this study, an attempt was made to maximize the length of stream section between the sample site and a lake. This maximizes the area of drainage basin being sampled by the stream.

To maintain continuity with data collected from previous studies (Morris, Murray and Crabtree 1994; Morris, Crabtree and Pianosi 1997; Morris, Crabtree and Averill 1998; Stephenson, Morris and Crabtree 1999; Morris et al. 2000; Morris, Pitre and Larose 2002) similar sampling procedures were employed in the present study. Modern alluvium was collected from bars or sediment traps where heavy minerals tend to concentrate. Material was sifted through a 7 mm mesh, steel sieve to exclude the coarse fraction. A minimum of 10 kg of the less than 7 mm sized material was collected at each site. At sites where the material was fine-grained, a minimum of 15 kg of less than 7 mm sized material was collected to ensure that a sufficient amount of heavy mineral concentrate was collected. A sample of the greater than 7 mm sized fraction was also collected to determine pebble lithology.

Till samples were collected from subglacially deposited materials. The matrix of these tills in the Longlac area is charged with carbonate, likely derived from Paleozoic limestone and dolostone bedrock strata located to the north in the Hudson Bay lowland. The degree to which the heavy mineral signature derived from this till can be traced to a local signature is unclear. Further study on this is ongoing (Slattery and Morris 2002). At each till sample site 3, 200 g sub-samples were collected; one each of humus and till "B" and "C" horizon material. These samples were submitted for geochemical analysis. The geochemical data derived from these materials is not yet available. Therefore, procedures for processing these materials and discussion of results will be presented at a later date.

In addition, till "C" horizon material was passed through a 7 mm mesh, steel sieve, to exclude the coarse fraction. Approximately 50 pebbles were randomly collected from this coarse fraction (number collected dependant upon abundance) and processed to determine pebble lithology. Ten kg of till "C" horizon material that passed through the 7 mm sieve was collected and submitted for heavy mineral analysis.

Observations made at each sample site include a site description (sample site material type, surrounding material type, presence of bedrock or boulders, topography, channel surface slope, stream flow, drainage of surrounding area and vegetation) and material description (texture, abundance, size, shape, surface features, types of pebbles and bar form). A more detailed explanation of the types of observations made are reported in Morris and Kaszycki (1997).

Sampling Strategies

Orientation Surveys

Two orientation surveys were completed over different bedrock lithologies. The first survey was completed over the Golden Tiger gold property east of the study area and south of both Highway 11 and Chowder Lake (585900E 5514200N). The primary purpose of this survey was to establish gold grain signatures for different overburden materials overlying or in the vicinity of known gold mineralization (Appendix 1, this report). The recovery of significant numbers of gold grains from this site would be followed by a detailed sampling program to determine the glacial dispersal characteristics of the heavy minerals. This information is useful in interpreting gold grain values derived from the regional sampling program.

The second orientation survey was conducted in response to a significant KIM signature obtained from modern alluvium and till samples collected early in the summer of 2002. The purpose of this survey was to: a) verify significant anomalous KIM values recovered from a modern alluvium and a subglacial till sample, collected within close proximity to each other; and b) to establish any local distribution of KIMs that might focus exploration on a specific kimberlite target. Material collected included coarse-grained glaciolacustrine, modern alluvium and diamict samples (Appendix 1, this report). Till within the area of the second orientation survey was reworked by processes associated with glacial lakes. As this till is reworked, it is referred to as a diamict. Sampling the diamict was considered acceptable as the material likely reflects local properties.

Regional Surveys

Regional surveys provide data on the types, distribution and relative concentration of heavy minerals in a given region. The focus of the 2001 regional sampling program was to provide information for the Longlac area on the types, distribution and concentration of KIMs, MMSIMs®, gold and carbonatite heavy minerals. The number of modern alluvium samples collected was predetermined by budget considerations. As many modern alluvium samples were collected as the program budget would allow, from as broad an area as possible. For the sampling of subglacial tills, a hypothetical 5 km² grid was placed over the study area and as many of the grid squares as possible were sampled for till. Fewer sediment samples were collected from glaciolacustrine, glaciofluvial, esker and recessional moraine deposits. These samples were collected to characterize heavy mineral signatures from these materials and landforms.

Heavy Mineral Recovery and Identification

All samples were sent to Overburden Drilling Management Ltd. (ODM) in Nepean, Ontario for processing to isolate KIMs, MMSIMs[®], gold grains and carbonatite heavy minerals. This procedure is discussed in detail elsewhere and will not be repeated herein (Morris and Kaszycki 1997). Composition of critical indicator minerals was determined at the Ontario Geoscience Laboratories (OGL) through microprobe analysis. Sample processing data is summarized in Morris (2002, Appendices 2 and 3).

A detailed gold grain summary is provided in Morris (2002, Appendix 4). The physical appearance of each gold grain was evaluated and classified as either pristine, modified or reshaped. Due to gold's malleability, grain shape is transformed during transport by glacial ice (DiLabio 1990). Therefore, a reshaped grain is more likely to have been transported a greater distance from its source than a pristine one.

During sample processing, 6 types of KIMs are recovered: Cr-pyrope garnet; Cr-poor megacrystic pyrope garnet, eclogitic pyrope-almandine garnet; Cr-diopside; Mg-rich ilmenite; and chromite. Forsteritic olivine, a mineral commonly associated with kimberlite was also picked, when observed, in the heavy mineral concentrate (Morris 2002, Appendices 5 and 6).

Processing also recovered several types of MMSIMs[®]. Types of MMSIMs[®] and associated bedrock type are discussed in Averill (1999) and summarized in Morris et al. (2000). Recovered MMSIMs[®] are summarized in Morris (2002, Appendix 7). In addition to the individual MMSIMs[®], each sample's heavy mineral assemblage was described (Morris 2002, Appendix 8).

Potential KIM grains were sent to the OGL for microprobe analysis to determine precise grain composition (Morris 2002, Appendix 9). In addition to the Cr-diopsides, chromites and olivines, initially identified as KIMs, MMSIMs[®] such as gahnite, ruby corundum, spinel, grossular, spessartine, some orthopyroxenes and rutile were also processed through the microprobe (Morris 2002, Appendix 9). The calibration routine and operating conditions for the microprobe are summarized in GEO LABS (2000).

During the course of processing material, samples of immediate interest were noted and highlighted. Highlighted samples could consist of: a) anomalous values of KIMs, MMSIMs[®], gold or carbonatite grains; b) grains having surface features that could be indicative of close proximity to source; c) unusual grains not commonly observed within a sample; or d) evidence of sample contamination. These observations are summarized in Morris (2002, Appendix 10).

Indicator Minerals

Kimberlite Indicator Minerals

Garnet

Garnet grains recovered and analyzed from samples collected in this study include Cr-pyrope, pyrope, almandine, andradite and spessartine. Garnets of peridotite origin are typically Cr-rich pyropes. This mineral may originate from many different types of peridotite, but the most important are harzburgite and lherzolite. Eighty-five percent of Cr-pyropes that occur as inclusions in diamond are Ca-depleted, Cr-enriched and harzburgitic in origin (Gurney 1984). These types of garnet have been termed "G10" (Dawson and Stephens 1975). The recovery of "G10" garnets from surficial material is important since it suggests that these minerals originated from harzburgitic peridotite and are more strongly associated with diamonds than are garnets of lherzolitic ("G9") origin (Dawson and Stephens 1975).

Other pyrope garnets associated with kimberlites are the megacrystic suite, which are not directly associated with diamond. These, when found with other KIMs, can also be useful indicators. These minerals range from Cr-poor to moderate levels (2 to 3 wt %) of Cr_2O_3 .

The composition of mantle derived eclogitic garnet is complex and overlap may exist between garnets of peridotitic and deep crustal origin (Dawson and Stephens 1975). However, it is possible to differentiate eclogitic garnets from crustal and Cr-poor megacrystic garnets through analysis of the garnet's composition (Schulze 1999). Typically, eclogitic garnets have an FeO content of less than 22 wt %. The MnO wt % values of eclogitic garnets are commonly less than 0.5 wt % whereas crustal garnets have values of over 1 wt %. Also, the wt % Na_2O for garnets derived from diamond-bearing eclogites is greater than 0.07 (Gurney 1984; McCandless and Gurney 1989; Schulze 1999). Like the "G10" Cr-pyrope garnet, eclogites with low FeO and MnO wt % values and high Na_2O wt % values are considered a valuable KIM.

Chromite

Chromites found in diamond inclusions differ from most other chromites by their high Cr_2O_3 content, generally greater than 61 wt % (Gurney 1984). In addition, they also have an MgO content greater than 10 wt % (Fipke, Gurney and Moore 1995). These chromites are termed "inclusion field" chromites since they plot in the diamond inclusion field on a chromite Cr_2O_3 -MgO plot. Finding such a chromite in surficial material is just as significant as finding a "G10" Cr-pyrope garnet.

Chromite Cr_2O_3 - TiO_2 plots are useful in differentiating chromite unique to lamproites and kimberlites from those that are non-lamproitic or non-kimberlitic in origin (Fipke, Gurney and Moore 1995). Those chromites that plotted in the non-lamproite/kimberlite field were excluded from the KIM database. Those that plotted in the overlap

field and the field unique to kimberlites and lamproites were included in the KIM database.

Mg-ilmenite

Ilmenite found within kimberlite is generally Mg-rich with MgO values that range between 4 and 15 wt % (McCallum and Vos 1993) and Cr_2O_3 values that range from 0.1 to 11.0 wt % (Mitchell 1986). In this study, such ilmenites recovered from overburden are regarded as useful KIM indicators.

A Mg-ilmenite parabolic plot (Cr_2O_3 vs. MgO; Gurney and Moore 1991) can be used to determine if the ilmenite grains originated from a reducing environment (favorable for diamond preservation within the magma) or from an oxidizing environment (conducive to diamond resorption into the magma). This diagram is based on the suggestion that the incorporation of Fe_2O_3 into the ilmenite structure is dependent upon oxygen fugacity ($f\text{O}_2$) in the kimberlite magma (Hagerty and Tompkins 1983). Therefore, ilmenite chemistry may be useful in predicting if magma conditions are favorable for diamond preservation (reducing conditions) or resorption of the diamond into the magma (oxidizing conditions; Gurney and Zweistra 1995).

Cr-diopside

Stephens and Dawson (1977) attempted to classify Cr-diopsides as kimberlitic based on cluster analysis. Their analysis suggested that most Cr-diopsides derived from kimberlite consist of Cr_2O_3 wt % values greater than 1.45. These were referred to as high Cr-diopsides, and since then, Cr-diopside has been classified as kimberlitic based on this Cr_2O_3 wt % value (McClenaghan et al. 1993; McClenaghan et al. 1995; McClenaghan et al. 1996). However, clinopyroxenes isolated from kimberlite have a wide range of chrome content. For example, Cr-diopsides isolated from kimberlite in the Kirkland Lake-Cobalt area of northeastern Ontario have Cr_2O_3 wt % values ranging between 0.03 and 3 (Sage 1996). For this reason, others have used a more liberal cut-off value of 0.5 wt % Cr_2O_3 (Thorleifson and Garrett 1993).

Recognizing a need to determine better criteria for defining Cr-diopside sources, the OGS undertook a study to characterize the composition of Cr-diopside from kimberlite and other bedrock types. By comparing the molecular wt % of Cr_2O_3 , Al_2O_3 and Na_2O , the OGS established a template within which Cr-diopsides recovered from kimberlite plot as a separate field (Morris, Sage and Ayer 1999; Morris et al. in prep.). The parameters of this template are summarized in Morris, Pitre and Larose (2002). The application of this template to Cr-diopside data obtained from overburden samples is useful in differentiating Cr-diopside derived from a deep mantle source as opposed to a shallow crustal source, and is a far better discriminator of Cr-diopsides derived from kimberlite than from previous methods cited in the literature.

The number of Cr-diopsides identified as having "kimberlitic affinity" (plot within the template) from this study is low and is in proportion with other KIMs from the same samples. In addition, the group of Cr-diopsides isolated within the template from

this study do not have a large overlap with other "groups" of Cr-diopsides on the ternary diagram. Therefore, it is not necessary to apply other plots to the data as was necessary for data generated for the Foleyet area of northeastern Ontario (Ontario Geological Survey 2001c, 2001d).

Olivine

Like Cr-diopsides, olivine on its own is not a good KIM. Previously, a binary plot comparing Mg/Mg+Fe vs. SiO₂, was developed and applied to olivine data (Morris et al. 2000). Although this approach was successful in screening out many olivines unrelated to kimberlite, there were many that plotted within an overlap field that included both mafic and kimberlite-derived olivine. As a result, an area around Killala Lake was highlighted as a potential kimberlite exploration area based largely on the presence of anomalous numbers of olivine grains. Unfortunately, the olivines were likely derived from a gabbroic ring associated with the Killala Lake alkalic complex located directly up ice of the proposed kimberlite exploration area (Morris et al. 2000).

In an attempt to improve on this binary plot, a second binary plot comparing olivine wt % CaO and forsterite content was developed (Ontario Geological Survey 2001c). This plot is based upon examination of olivine data derived from Ontario kimberlites, where it was noted that olivines derived from kimberlite had a depleted CaO wt % when compared to other rock types (unpublished data). This may be due to a combination of pressure (Finnerty 1986) and the effects of magmatic cooling rates. Because of this, olivine associated with kimberlite plot within a unique field on the wt % CaO vs. forsterite content binary plot. Although this approach is a significant improvement in using olivine as a KIM, it should be noted that olivines from layered mafic complexes can have similar compositions to those derived from kimberlite (Morse 1996).

Metamorphic or Magmatic Massive Sulphide Indicator Minerals

Averill (1999) defined a suite of minerals useful for identifying metamorphosed volcanosedimentary massive sulphide, skarn, greisen and magmatic Ni-Cu massive sulphide deposits. Identifying these minerals in overburden deposits is possible and useful as they are: 1) coarse-grained in the host rock; are unique to these types of mineralization; 2) visually distinctive; 3) easy to concentrate due to their specific gravity (> 3.2); 4) amenable to paramagnetic separation; and 5) are relatively resistant to weathering (Averill 1999). From a practical viewpoint and due to time constraints, the composition of all these grains was not determined. Only the composition of Cr-diopside, chromite, gahnite and olivine will be discussed.

Cr-diopside

Only those Cr-diopsides plotting outside the kimberlite template (as defined in the previous section) were considered as potential MMSIMs[®]. These grains were further subdivided based on their Cr₂O₃ wt % values. Cr-diopside recovered from Ni-Cu massive sulphide deposits in the Thompson Nickel Belt (Manitoba) and Finland consistently have

Cr₂O₃ wt % values less than 1.3 (S. Averill, Overburden Drilling Management Limited, personal communication, 1999). For this reason, Cr-diopsides with less than 1.3 wt % Cr₂O₃ were considered to be MMSIMs[®]. However, when using this criteria, caution must be exercised as several Cr-diopside grains derived from 2 lamprophyres sampled in the Killala Lake area have Cr₂O₃ wt % values of less than 1.3 (Morris et al. 2000). Those with a wt % Cr₂O₃ greater than 1.3 were excluded from the MMSIM[®] data base.

Chromite

Chromites that plot in the non-lamproitic/kimberlitic field and the overlap field of the Fipke, Gurney and Moore (1995) Cr₂O₃-TiO₂ plot were included in the MMSIM[®] database.

Olivine

Olivine grains that plotted outside the kimberlitic olivine field on the wt % CaO versus forsterite content binary plot and within a forsterite content between 40 and 95 were classified as an MMSIM[®]. See previous discussion regarding olivine as a KIM.

Gahnite

Gahnite is a useful indicator mineral in exploration for polymetallic deposits in high grade metamorphic terrane due to its hardness (8) and stability in metamorphic rocks (Parr 1992). Although rare, gahnite is reported in a number of polymetallic deposits (Chew 1977; Plimer 1977; Spry 1982, 1987a, 1987b; Williams 1983; Sheridan and Raymond 1984; Spry and Scott 1986). Gahnite was also successfully evaluated as an indicator mineral in glacial dispersal plumes from the Montauban polymetallic deposit in Quebec (Lalonde et al. 1994). Gahnite is not only an indicator of polymetallic deposits within high grade metamorphic terranes but also of pegmatite (Cerny et al. 1981; Cerny and Hawthorne 1982).

Little work has been done using mineral composition to differentiate gahnite found within different source rocks (Batchelor and Kinnaird 1984; Dunlop 2000). Gahnite analytical work completed by Morris (1996, 1997, 1998, 1999a, 2000) and Morris et al. (1997) indicate that gahnite from polymetallic deposits commonly has MgO values greater than 2 wt %. Gahnite from rare element pegmatite has MgO values commonly less than 2 wt % (Morris et al. 1997). Gahnite recovered from samples in this study were similarly classified.

Data Plotting Parameters

Data plotting parameters were discussed in Morris et al. (2000) but will be presented here due to their significance with regard to data interpretation. To identify areas or sites favorable for kimberlite, base metal, gold or carbonatite exploration, it is important to identify the location of important KIMs ("G10" Cr-pyrope garnet, "inclusion field" chromite), MMSIMs[®] (gahnite, low Cr-diopside), gold grains (pristine grains) and

carbonatite indicator minerals (barite, perovskite, synchisite). The proportional dot diagrams presented in this report illustrate the relative abundance of heavy indicator minerals and their locations throughout the study area.

The proportional dot diagrams in this report, in part, are based on data recalculated to account for those samples with large numbers of estimated grains. For reasons of practicality, estimates rather than precise counts of the number of heavy mineral indicators in some concentrates were inferred by the external lab (Morris 2002, Appendix 5). For example, the heavy mineral concentrate of sample 1330-Ma-01 contained an estimate of 100 ilmenite grains, however, only 25 ilmenite grains were picked. The composition of the 25 ilmenite grains was used to infer the number of kimberlitic and non-kimberlitic grains. An example of this type of calculation is presented in Stephenson, Morris and Crabtree (1999). Comparison of the number of grains picked vs. the number of grains estimated within the heavy mineral concentrate per site are presented in Appendix 2 (this report).

Heavy mineral concentrates were further normalized to a table feed weight of 10 kg. However, as this did not generate any additional anomalous sites or trends compared to the plotting of non-normalized data these results are not included in this report.

Summary proportional dot diagrams for KIMs, gold and carbonatite are based on total numbers of each suite of indicator minerals. However, this was not possible for the MMSIMs[®] as some of the heavy minerals were reported as either actual grain counts (e.g., gahnite), as "trace" amounts (e.g., kyanite) or as a percentage of a particular grain size (e.g., orthopyroxene). To get around this problem, where an MMSIM[®] was reported as a "trace", a value representing half the lowest recorded value was applied (0.25). Subsequently, those sites with a significant MMSIM[®] value were identified.

The sites were then ranked from 0 to 6 for modern alluvium, 0 to 5 for till, 0 to 3 for esker, 0 to 4 for glaciolacustrine, 0 to 3 for glaciofluvial and 0 to 3 for recessional moraine samples. For example, sample 87-Ma-01 has one of the higher numbers of significant MMSIMs[®] at 6 (chromite, loellingite, Mg-epidote, native gold, pyrite and spessartine) and was therefore given a ranking of 6. Site 253-Tm-01 was given a ranking of 5 as it consisted of 5 different types of MMSIMs[®], each with a significant value (kyanite, Mn-epidote, spessartine, spinel, staurolite). The ranked values were then ordered from highest to lowest value to produce an MMSIM[®] proportional dot diagram summarizing the distribution of those sites with the highest number of significant, individual, MMSIMs[®].

RESULTS

Overburden Orientation Surveys

Samples associated with each of the orientation surveys are summarized in Table 1. Detailed information regarding the heavy mineral assemblages associated with these samples is summarized in Morris (2002, Appendix 9).

Orientation Survey	Samples		
Golden Tiger (gold)	Modern Alluvium	Till	Esker
	690-Ma-01	696-Tm-01	704-Es-01
	691-Map-01	697-Tp-01	705-Esp-01
	706-Ma-01	702-Tm-01	
	707-Map-01	703-Tp-01	
		712-Tm-01	
		713-Tp-01	
		717-Tm-01	
		719-Tp-01	

Orientation Survey	Samples		
Pic River (possible kimberlite)	Modern Alluvium	Till	Glaciolacustrine
	1395-Ma-01	1365-Tm-01	1364-Gl-01
	1396-Map-01	1367-Tm-01	1376-Gl-01
	1397-Ma-01	1370-Tm-01	1386-Gl-01
	1398-Map-01	1373-Tm-01	1393-Gl-01
	1399-Ma-01	1377-Tm-01	1394-Glp-01
		1380-Tm-01	
		1383-Tm-01	
		1387-Tm-01	
		1390-Tm-01	

Table 1. Summary of samples associated with orientation surveys.

Golden Tiger

Golden Tiger discovered gold mineralization and explored for gold on ground located 10 km east of the study area and 5 km south of Highway 17. The gold is finely disseminated within mafic metavolcanic rock exposed at surface. This site is potentially an excellent target for an orientation survey to determine dispersal characteristics of gold grain or gold geochemical signatures due to the amount of exposed bedrock and thin subglacial till cover. However, given that the gold is finely disseminated within the bedrock, an abbreviated sampling program was carried out to determine if gold grains occur within a variety of overburden materials associated with the site. Two modern alluvium, 4 till and 1 esker sample were collected (Table 1).

Unfortunately, no gold grains were recovered from any of the samples collected on this property. This could be due to: 1) the gold is too fine-textured to be recovered in the lab; 2) the gold is disseminated within the bedrock; 3) gold grains did not exist within the bedrock surface for glacial ice to erode; or 4) the bedrock surface was not

exposed to the glacial ice for erosion. Gold geochemical data from the till samples was not available at the time of publication, therefore, it is unknown whether or not a till geochemical orientation survey is warranted.

Pic River

During the course of regional sampling, a very strong KIM signature occurred within 2 samples in the vicinity of the Pic River, 6 km south-southwest of Caramat (Table 2). To verify the regional modern alluvium KIM signature, 3 additional modern alluvium samples were collected from the Pic River: one from the location of the regional sample that produced the anomalous KIM signature; a second upstream; and a third downstream of the regional sample site. Unfortunately, the anomalous KIM signature was not duplicated (Table 2).

East-northeast of the anomalous regional modern alluvium sample, bedrock occurs as topographically high ground. Commonly, subglacially derived till, ideal for till sampling programs, can be collected from such terrain. Nine till samples were collected from 3, northerly oriented transects (3 till samples per line). However, it is important to note that the till comprising 6 of these samples was reworked by glacial lake waters formerly associated with the Lake Superior basin. Reworked till such as this is not a preferred media for sampling programs as the heavy minerals associated with this material can be re-mobilized and transported elsewhere. The other 3 till samples (TM-01-1370, 1373, 1383), however, are subglacial tills and they produced KIM signatures (Table 2). Sample TM-1373-01 was collected in close proximity to the anomalous regional till sample.

Coarse-grained glaciolacustrine materials surrounds the topographically higher ground. A sample of this material (pebble-free fine-textured sand) was collected from the north end of each till transect to determine its heavy mineral composition and to provide a comparison to the other sampled material's heavy mineral signature. In addition, a fourth coarse-grained, glaciolacustrine sample was sampled from a rehabilitated aggregate pit (pebbly, coarse sand) between the Pic River and topographically higher ground. The fourth sample (GI-1393-01) provided a reasonable KIM signature (Table 2).

Although it was disappointing that the KIM signature from the regional modern alluvium sample could not be duplicated, it was encouraging that the regional till KIM signature was highlighted. In addition, 2 other till and one glaciolacustrine sample also yielded KIMs. This data implies that this area is worth exploring for kimberlite.

Sample	Tot Gar	Tot Cr	Mg-Il	DC	FO	Total
Regional Survey Samples						
MA-01-97	37*	2**	55	4	0	98
TM-01-537	1	1	9	0	0	11

Orientation Survey Samples						
Modern Alluvium						
MA-01-1395	0	0	0	0	0	0
MA-01-1397	0	0	0	0	0	0
MA-01-1399	0	0	0	0	0	0
Till						
TM-01-1365	0	0	0	0	0	0
TM-01-1367	0	0	0	0	0	0
TM-01-1370	0	0	0	0	0	0
TM-01-1373	0	1	7	1	0	9
TM-01-1377	0	0	1	0	0	1
TM-01-1380	0	0	0	0	0	0
TM-01-1383	0	0	5	0	0	5
TM-01-1387	0	0	0	0	0	0
TM-01-1390	0	0	0	0	0	0
Glaciolacustrine						
GL-01-1364	0	0	0	0	0	0
GL-01-1376	0	0	0	0	0	0
GL-01-1386	0	0	0	0	0	0
GL-01-1393	0	2	1	0	0	0

* Includes 1 Na-eclogite garnet

** Includes 1 exclusive kimberlite chromite

Gar: Garnet	Mg-Il: Magnesium Ilmenite	FO: Forsteritic Olivine
Cr: Chromite	DC: Cr-diopside	Na: Sodium

Table 2. Summary of kimberlite indicator minerals recovered from the Pic River orientation survey. Values in chart represent number of grains recovered.

Regional Surveys

Pebbles

Pebble lithology data is commonly used to evaluate proximity of an overburden heavy mineral or geochemical signature to source (Morris et al. 1998; Stephenson, Morris and Crabtree 1999; McMartin 2000). Pebble lithology data determined from samples collected for this study is summarized in Morris (2002; Appendix 11). Using pebble data in the Longlac area is problematic as the matrix of the area's subglacial till is charged with carbonate and the till contains numerous carbonate clasts. The carbonate material is derived from Paleozoic carbonate strata of the Hudson Bay lowland indicating that a significant proportion of the till's matrix is not local.

Defining the critical threshold of local pebbles that represent a local signature in such a matrix is difficult and likely varies throughout the study area due to local topography and paleo-iceflow characteristics. Carbonate clasts do represent a significant component of the local subglacial till matrix (Table 3) and there is not a clear relationship between pebble lithology and the terrain type over which the samples were collected. This variation in pebble lithology values may reflect proximity of one bedrock terrane to another or, local bedrock geology is not yet completely understood. Therefore, unless there is a tremendous number of pebbles with the same lithology as the local bedrock terrane, it is not possible to use pebble lithology with any degree of confidence as an indicator for proximity of a heavy mineral signature to source.

Bedrock Terrane	Pebble Lithology				
	Volcanics (%)	Felsic Intrusives (%)	Sedimentary (%)	Carbonate (%)	Other (%)
Metasedimentary	1.7	70	17.4	10.5	0
Metavolcanic	4.4	55.9	2.1	34.5	2.5
Felsic Intrusive	8.3	53.3	4.4	30.9	2.1

Table 3. Mean values for pebble types recovered from subglacial till samples collected over different bedrock terranes.

Kimberlite Indicator Minerals

Garnet

Of the 165 garnets submitted to the OGL for microprobe analysis, 2 were determined to be "G10" Cr-pyrope garnets and 84 were identified as "G9" Cr-pyrope garnets (Figure 3). Seven grains were identified as eclogitic garnets, one of these classified as a Group I eclogite (Figure 4). Thirty-nine of the grains classify as megacryst, 24 as crustal, 5 as grossular and 4 as andradite. Microprobe data for all grains is summarized in Morris

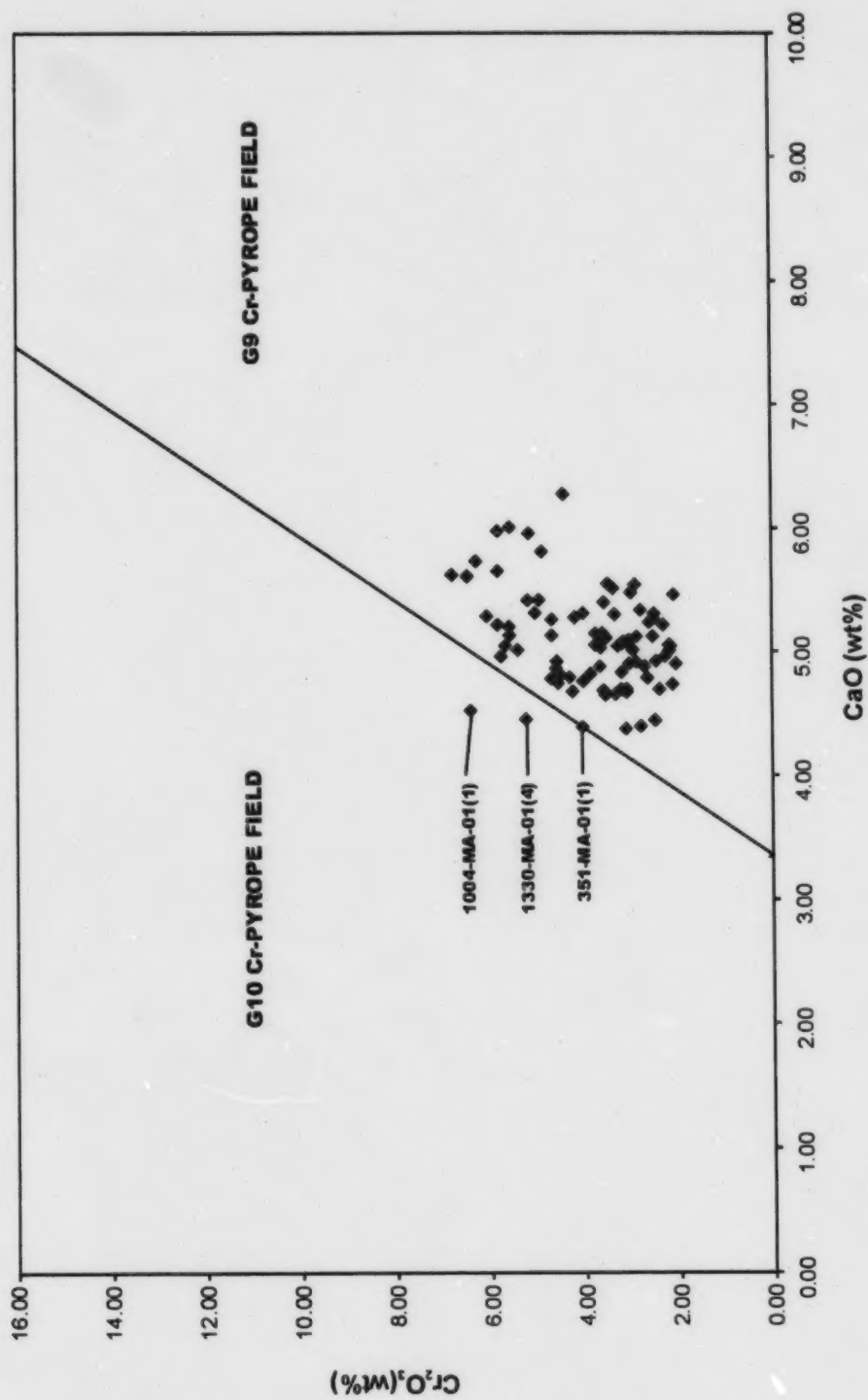


Figure 3. "G10" and "G9" Cr-pyroxene garnet Cr_2O_3 -CaO plot (after Dawson and Stephens 1975). Number in bracket refers to the grain's laboratory number. Individual grain values are summarized in Morris (2002)

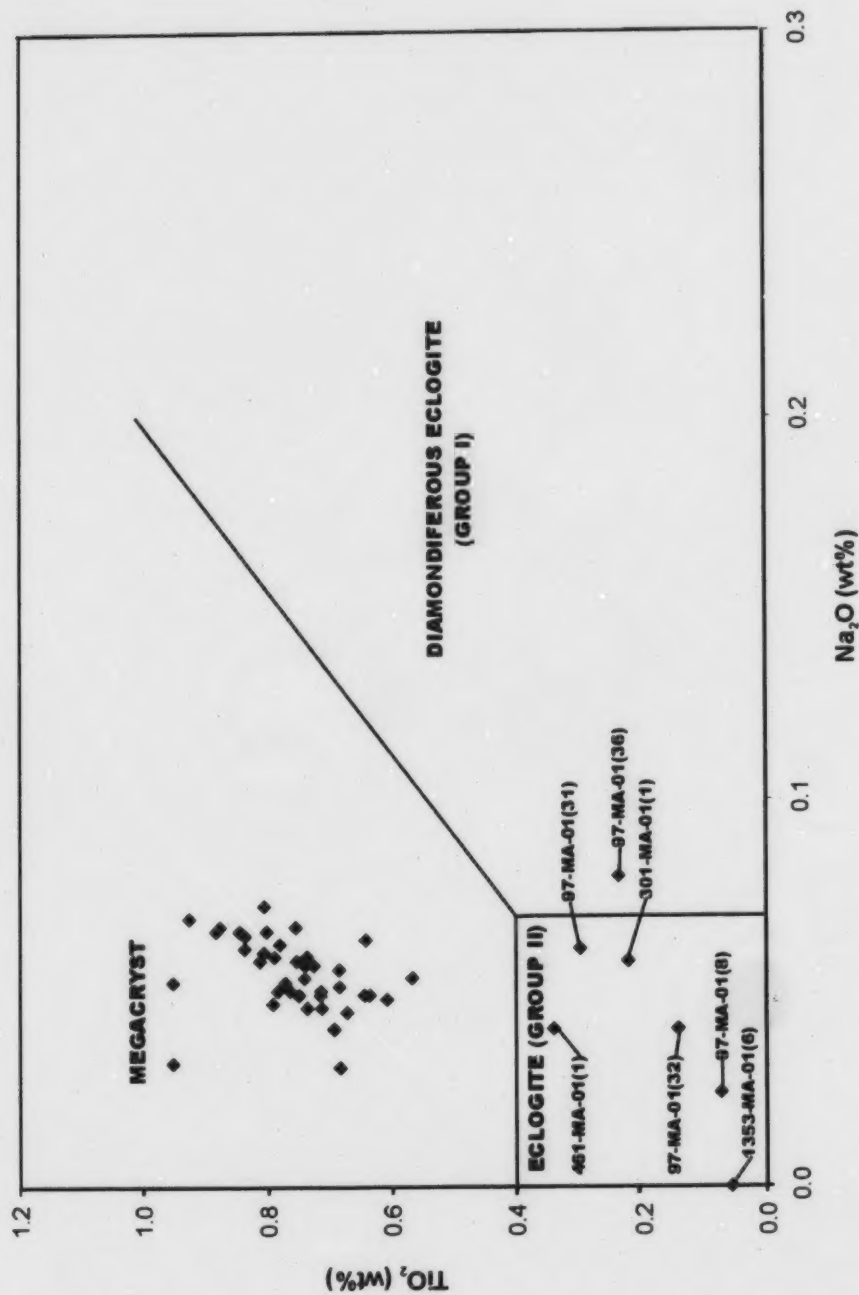


Figure 4. Eclogite-megacryst TiO_2 - Na_2O plot (after Schultze 1999). Number in bracket refers to the grain's laboratory number. Individual grain values are summarized in Morris (2002).

(2002, Appendix 9). Summary statistics for the garnets (based on regional data only) is provided in Table 4.

A proportional dot distribution diagram of the "total" garnet data set illustrates 4 areas and 10 individual sites where "G10", "G9", eclogite and megacryst garnets exist (Figure 5). The 4 areas include the: 1) Roddy Lake area (samples 1170-Tm-01, 2040-Es-01); 2) Kenogami River area (samples 381-Ma-01, 617-Tm-01, 623-Tm-01); 3) Pout/Pic river area (97-Ma-01, 107-Ma-01, 109-Ma-01, 207-Ma-01, 1330-Ma-01, 1353-Ma-01, 537-Tm-01); and 4) Devark-Mustela lake area (1076-Ma-01, 1333-Ma-01, 1340-Ma-01, 1064-Tm-01). Several individual sample sites yielding interesting garnet values include: 1004-Ma-01, 1345-Ma-01, 93-Tm-01, 253-Tm-01, 730-Tm-01, 1124-Tm-01, 1158-Tm-01, 2056-Es-01, 2018-Gf-01, 2046-Mr-01.

Chromite

One hundred and forty-eight chromite grains were submitted to the OGL for microprobe analysis (Morris 2002, Appendix 9). Of these grains, 1 plotted on the bottom edge of the diamond intergrowth field of the Cr_2O_3 -MgO plot of Fipke, Gurney and Moore (1995) (1330-Ma-01, Figure 6) and a second in the diamond inclusion and intergrowth field of the Cr_2O_3 - TiO_2 plot of Fipke, Gurney and Moore (1995) (45-Ma-01, Figure 7). Seven grains plotted in the field unique to kimberlite and lamproite on the Cr_2O_3 - TiO_2 plot of Fipke, Gurney and Moore (1995) (97-Ma-01 [1 grain], 1004-Ma-01 [1 grain], 1330-Ma-01 [2 grains], 1353-Ma-01 [2 grains], 617-Tm-01 [1 grain], Figure 7). Note that one grain from sample 1330-Ma-01 plotted in the diamond intergrowth field of the Cr_2O_3 -MgO plot of Fipke, Gurney and Moore (1995) and in the field unique to kimberlite and lamproite field on the Cr_2O_3 - TiO_2 plot of Fipke, Gurney and Moore (1995). On the same plot, 126 chromite grains plot in the overlap field and 14 plotted in the non-lamproite/kimberlite field.

Three areas and several individual sites stand-out as potential exploration targets for kimberlite based on the chromite data (Figure 8). These areas include: 1) Lyons Lake area (1004-Ma-01, 2020-Es-01); 2) Pout/Pic River area (97-Ma-01, 1330-Ma-01, 1353-Ma-01); and 3) Devark Lake area (239-Ma-01, 247-Ma-01, 1038-Ma-01, 1056-Ma-01, 237-Tm-01, 1016-Tm-01, 1054-Tm-01). Many of the chromite grains from the Devark Lake area plot in the overlap field of the Cr_2O_3 - TiO_2 plot of Fipke, Gurney and Moore (1995). They may be derived from processes associated with the development of the contacts between the metasedimentary/muscovite-bearing granitic/massive granodiorite to granite terranes rather than emplacement of kimberlite associated with structural weaknesses in the crust.

Mg-ilmenite

Of the 545 ilmenite grains submitted for microprobe analysis, 350 were classified as Mg-ilmenite (Morris 2002, Appendix 9). Summary statistics for the Mg-ilmenite is presented in Table 4. Microprobe data determined from those Mg-ilmenites submitted to the OGL were plotted on the Gurney and Moore (1991) Mg-ilmenite plot (Figure 9, Table 5). None

Media	General Statistics		
	Number of Sample Sites With Grains	Total Grains	Maximum per Sample Site
Modern Alluvium (values based on number of grains observed and picked from sample)			
G10s	2	2	1
G9s	21	66	18
Eclogite I	1	1	1
Eclogite II	4	6	3
Megacryst	12	38	15
Mg-ilmenite	49	301	107
Cr-diopside	75	149	8
Chromite, inclusive	2	2	1
Chromite, exclusive	4	5	2
Chromite, overlap	45	91	10
Chromite, outside	10	12	2
Olivine	9	10	2
Modern Alluvium (values re-calculated to estimated number of grains in sample concentrate)			
Mg-ilmenite	49	380	134
Chromite, overlap	45	112	21

Till (values based on number of grains observed and picked from sample)			
G9s	10	11	2
Cr-diopside	26	43	6
Mg-ilmenite	16	31	9
Chromite, exclusive	1	1	1
Chromite, overlap	15	28	9
Chromite, outside	2	2	1
Olivine	2	1	1
Till (values re-calculated to estimated number of grains in sample concentrate)			
Chromite, overlap	15	30	10

Chromite, inclusive: Grains likely associated with diamond-bearing kimberlite
Chromite, exclusive: Grains exclusively derived from kimberlite
Chromite, overlap: Grains that may either be kimberlitic or from other sources
Chromite, outside: Grains that are not related to kimberlite

Table 4. Summary statistics for KIMs associated with the regional survey. Values are subdivided by host material and whether the values are re-calculated to account for estimated numbers of grains within a sample's heavy mineral concentrate. A summary of samples comparing picked versus re-calculated values is presented in Appendix 2 (this report). Discussion on how these estimates are determined is presented in the data plotting parameter section of this report.

Table 4. (Continued)

Media	General Statistics		
	Number of Sample Sites With Grains	Total Grains	Maximum per Sample Site
Esker (values based on number of grains observed and picked from sample)			
G9s	2	2	1
Mg-ilmenite	3	5	3
Chromite, overlap	1	3	3
Olivine	1	1	1
Cr-diopside	4	8	3
Glaciolacustrine (values based on number of grains observed and picked from sample)			
Cr-diopside	2	6	4
Glaciofluvial (values based on number of grains observed and picked from sample)			
G9s	1	1	1
Mg-ilmenite	1	1	1
Cr-diopside	2	2	1
Recessional Moraine (values based on number of grains observed and picked from sample)			
G9s	1	1	1
Mg-ilmenite	1	1	1
Cr-diopside	2	3	2

of the values presented in Figure 9 and Table 5 are based on re-calculating values to account for estimated number of grains observed in a sample's heavy mineral concentrate. The reducing field indicates magma conditions favorable for diamond preservation while the oxidizing field indicates magma conditions conducive to diamond resorption. A number of grains from individual samples plotted in both the reducing and oxidizing fields (Table 5). This suggests that Mg-ilmenites were derived either from several different kimberlites or from different phases within a single pipe. There are 2 very strong distribution trends of data on the parabolic plot, the significance of which is not known. The first trend extends across the lower part of the oxidized component of the parabolic plot (Figure 9) The second trend starts just below the first but in the reducing component of the parabolic plot (Figure 9). A similar trend was observed on the Mg-ilmenite parabolic plot associated with the Killala Lake study (Morris et al. 2000).

Four areas and several individual sites stand-out as potential exploration targets for kimberlite based on the Mg-ilmenite data (Figure 10). These areas include: 1) Seagram Lake area (445-Ma-01, 163-Tm-01); 2) Pout/Pic River area (97-Ma-01, 1330-Ma-01, 1353-Ma-01, 213-Tm-01, 537-Tm-01, 2028-Mr-01); 3) Devark Lake (239-Ma-01, 1072-Ma-01, 1094-Tm-01, 2024-Gf-01); and 4) Castlebar Lake area (353-Ma-01, 2056-Es-01).

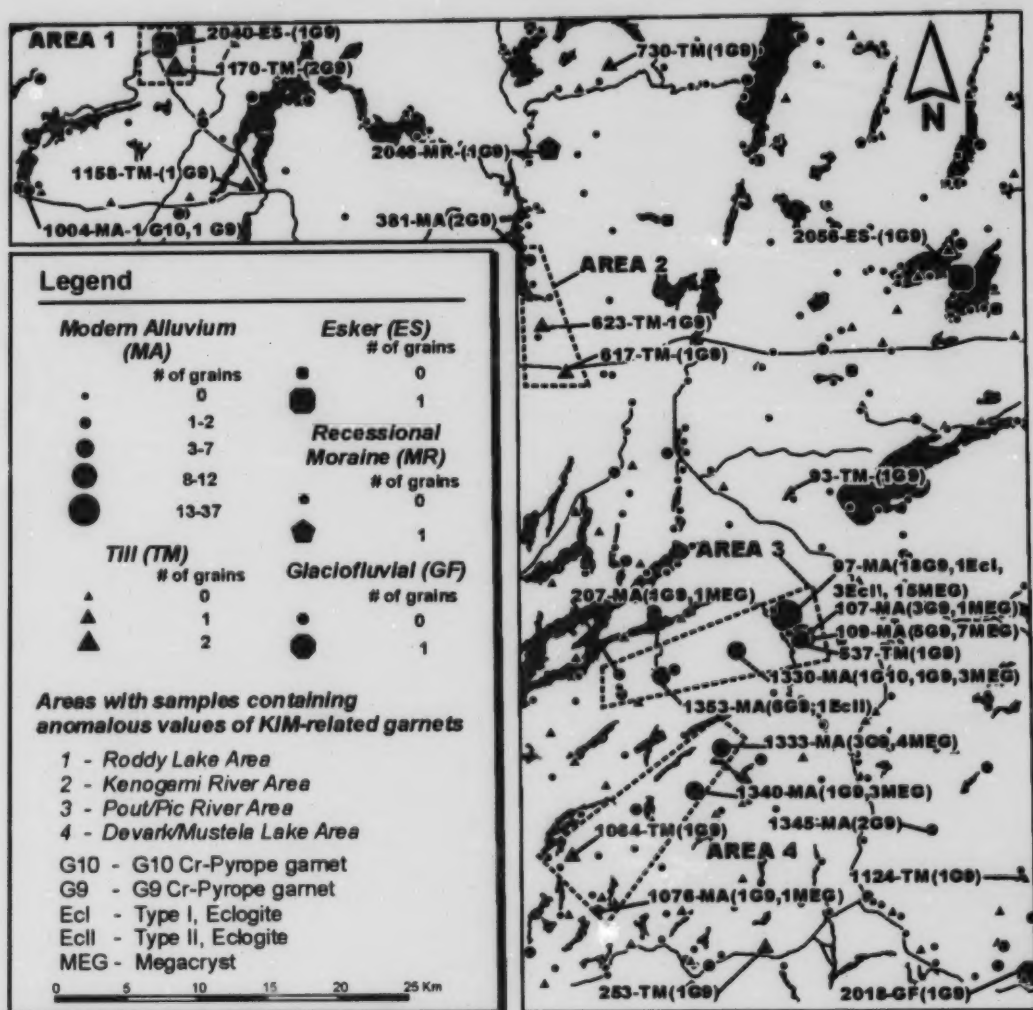


Figure 5. Regional distribution of "G10" and "G9", eclogite (I and II) and megacryst garnets. The number and acronym beside the sample number represents the number and type of garnet recovered from that site. The year (-01) has been dropped from the sample number to save space on the diagram.

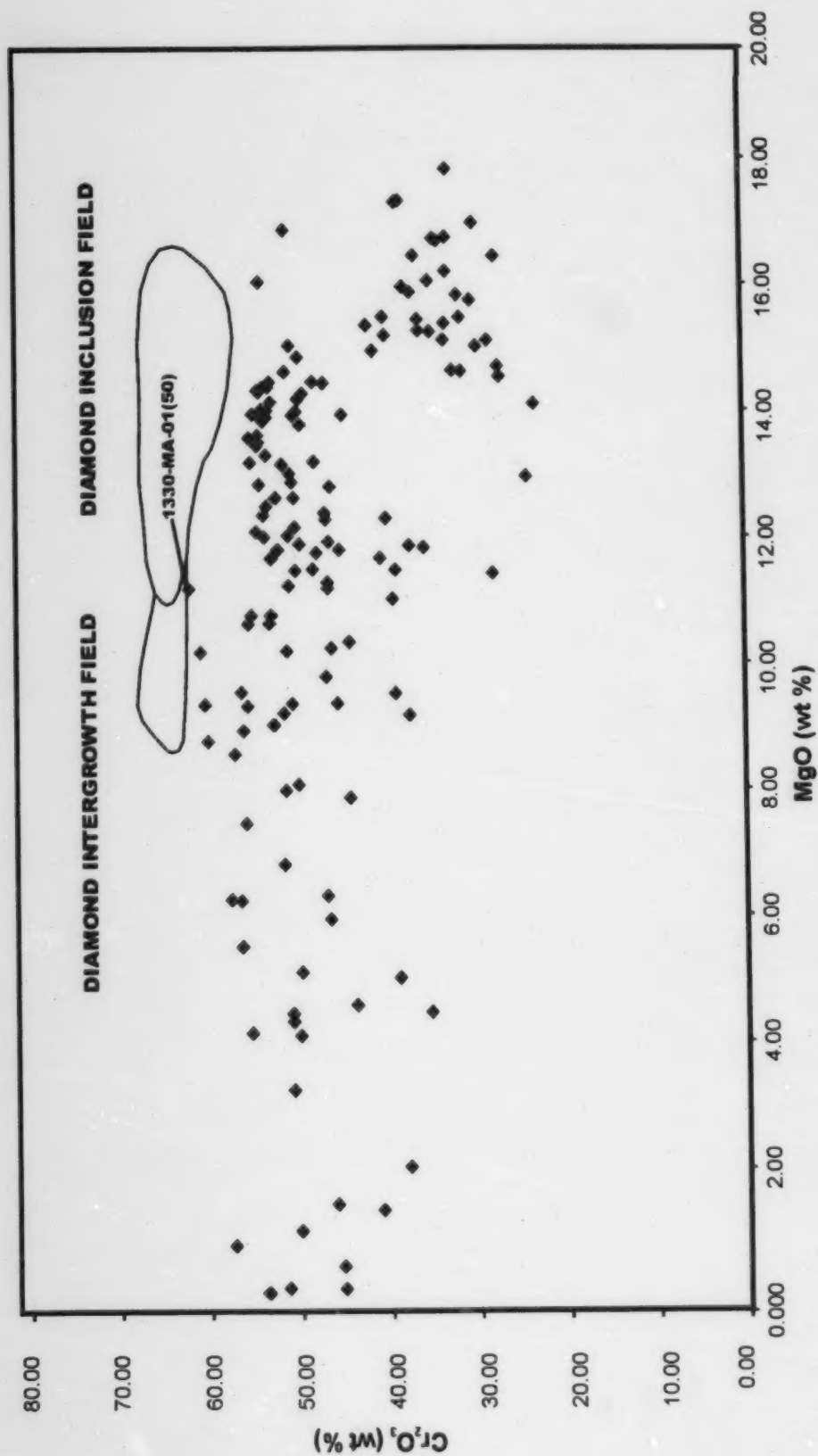


Figure 6. Chromite Cr_2O_3 -MgO plot (after Fipke, Gurney and Moore 1995). Note one grain plots on the lower margin of the diamond intergrowth field. Number in brackets (50) refers to the grain's laboratory number. Individual grains values are summarized in Morris (2002).

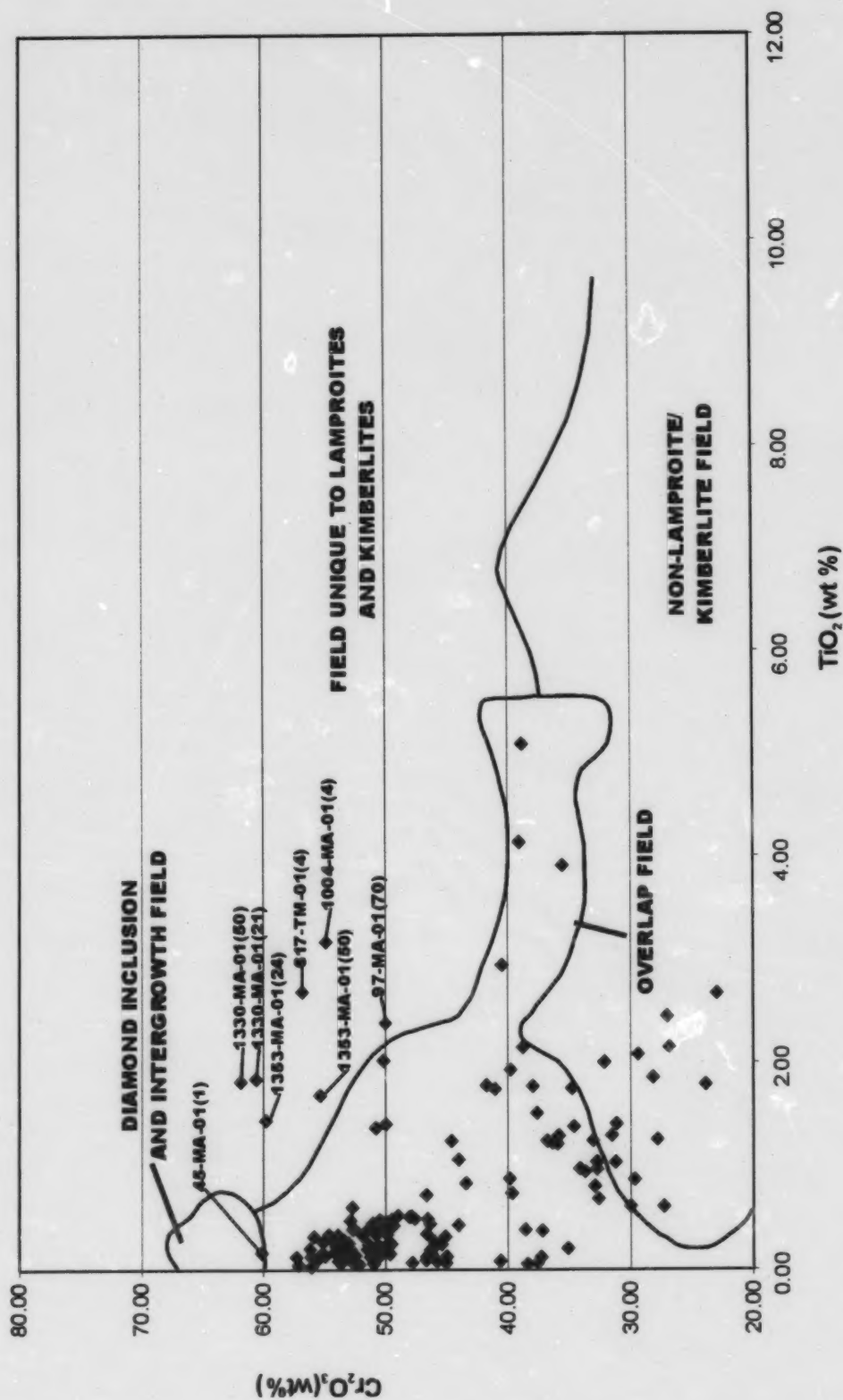


Figure 7. Chromite Cr_2O_3 - TiO_2 plot (after Fipke, Gurney and Moore 1995). See text for discussion. Individual grain values are summarized in Morris (2002).

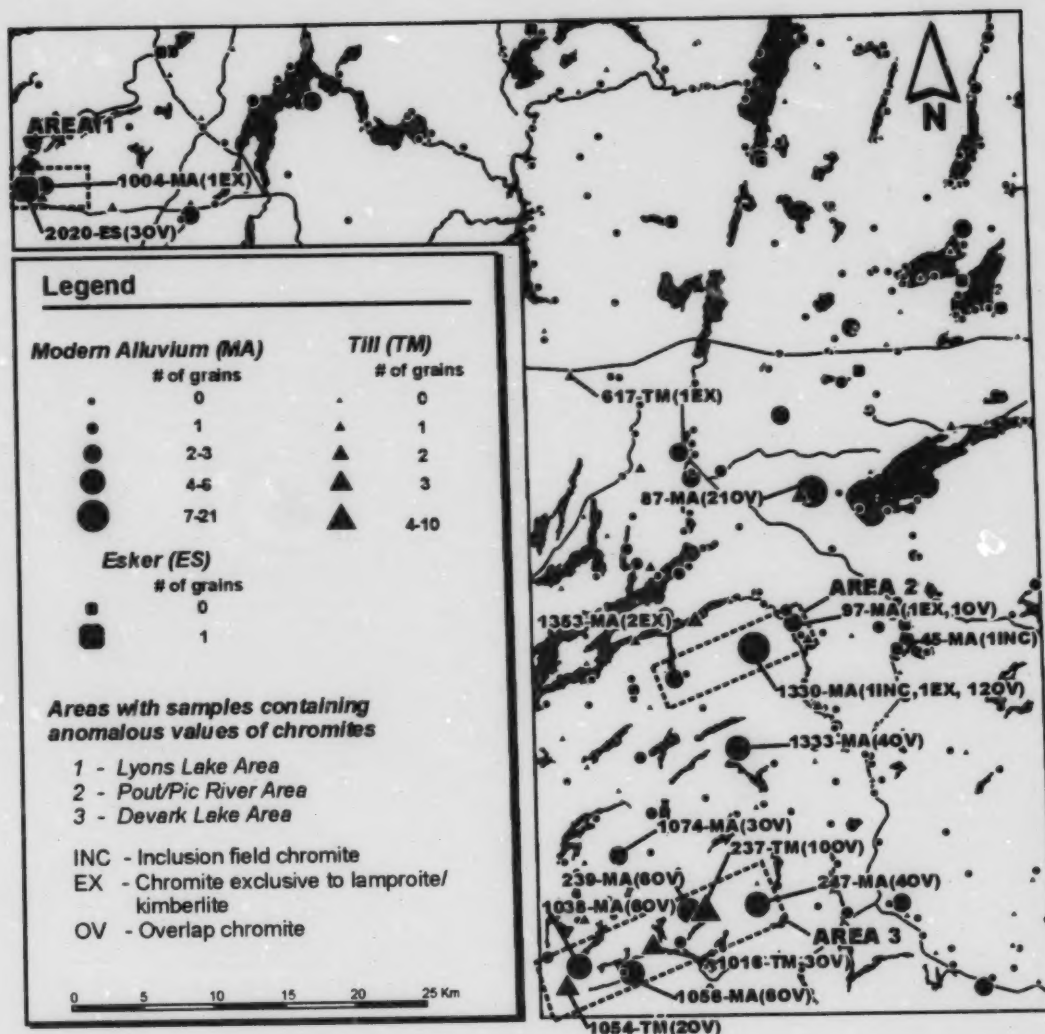


Figure 8. Regional distribution of chromite grains. The number in brackets represents the number of chromite grains recovered from that site. Note that 2 sample sites consist of numbers that are re-calculated estimates (87-MA-01, 1333-MA-01). For discussion on how values were re-calculated to account for estimated number of grains, see Plotting Parameter Section, this report. The year (-01) has been dropped from the sample number to save space on the diagram

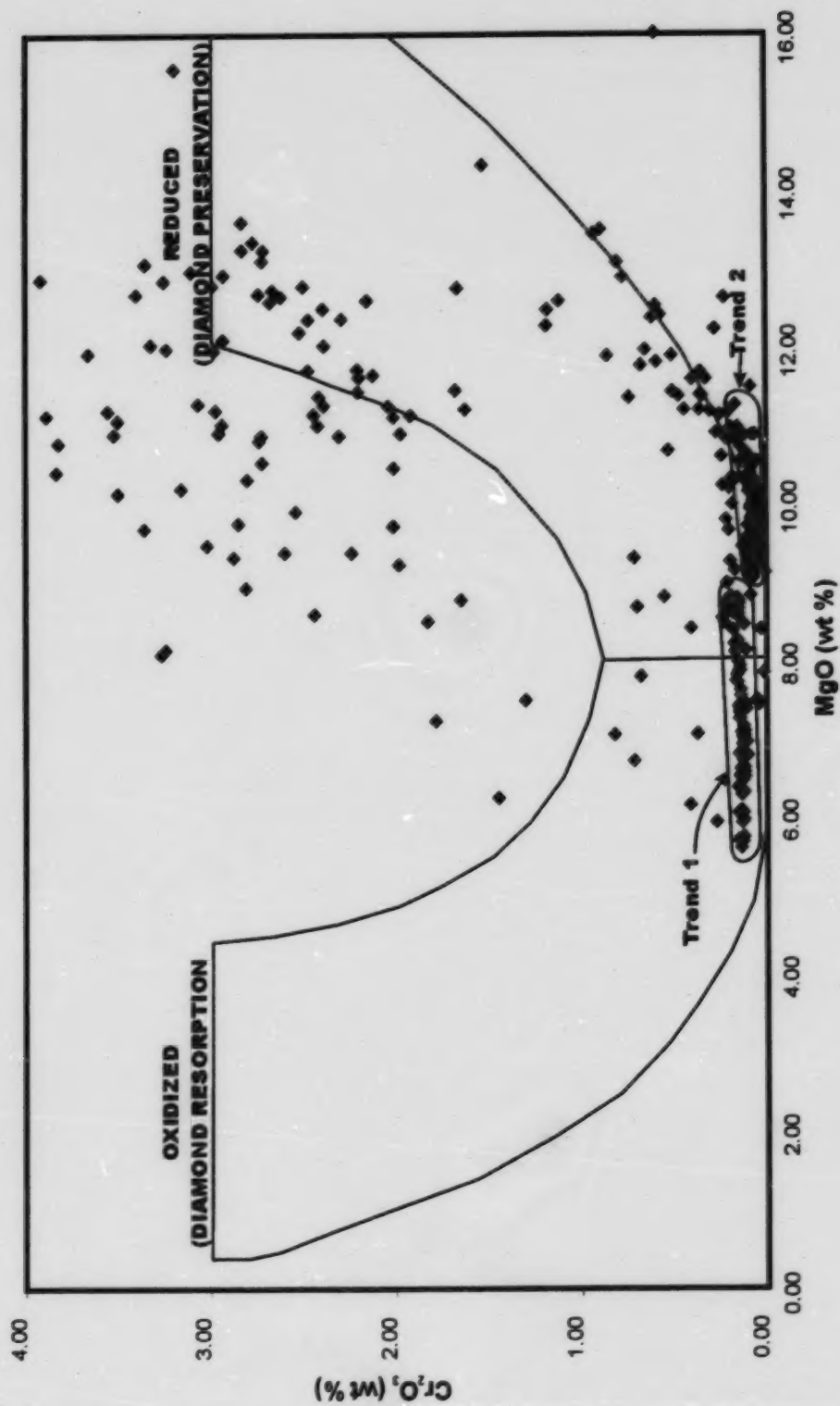


Figure 9. Mg-ilmenite Cr_2O_3 - MgO plot (after Gurney and Moore 1991). The values presented here are from microprobe data derived from Mg-ilmenites submitted to the Ontario Geoscience Laboratory. Note the 2 strong data trends on the plot. See text for discussion.

Sample Number	Number of Grains per Sample			
	Oxidized	Reduced	Outside	Total
87-MA-01	0	0	2	2
97-MA-01	2	15	12	29
143-MA-01	0	0	1	1
201-MA-01	1	0	2	3
213-MA-01	0	1	4	5
221-MA-01	0	4	2	6
239-MA-01	2	1	3	6
247-MA-01	0	1	0	1
255-MA-01	0	1	0	1
265-MA-01	1	0	0	1
303-MA-01	0	1	0	1
319-MA-01	0	1	0	1
351-MA-01	0	0	1	1
353-MA-01	0	1	4	5
401-MA-01	0	1	0	1
417-MA-01	0	1	0	1
445-MA-01	0	5	0	5
471-MA-01	0	1	2	3
479-MA-01	0	1	1	2
481-MA-01	0	2	1	3
523-MA-01	1	2	0	3
641-MA-01	0	2	6	8
655-MA-01	0	1	0	1
657-MA-01	1	0	0	1
1018-MA-01	1	1	1	3
1030-MA-01	0	0	1	1
1038-MA-01	0	2	0	2
1046-MA-01	0	1	0	1
1058-MA-01	0	1	0	1
1066-MA-01	0	1	0	1
1070-MA-01	1	0	0	1
1072-MA-01	1	1	2	4

Sample Number	Number of Grains per Sample			
	Oxidized	Reduced	Outside	Total
1075-MA-01	0	1	0	1
1084-MA-01	1	0	0	1
1098-MA-01	0	1	1	2
1142-MA-01	1	1	3	5
1160-MA-01	0	1	0	1
1330-MA-01	23	49	35	107
1333-MA-01	3	9	3	15
1335-MA-01	1	0	2	3
1340-MA-01	0	2	0	2
1345-MA-01	1	1	0	2
1351-MA-01	0	0	1	1
1353-MA-01	9	14	4	27
163-TM-01	0	1	1	2
265-TM-01	0	0	1	1
537-TM-01	1	4	4	9
551-TM-01	0	1	0	1
647-TM-01	0	1	0	1
671-TM-01	0	1	0	1
677-TM-01	0	1	0	1
686-TM-01	0	0	1	1
724-TM-01	0	0	1	1
1011-TM-01	0	1	0	1
1016-TM-01	0	0	1	1
1044-TM-01	0	0	1	1
1056-TM-01	0	0	1	1
1082-TM-01	0	0	1	1
1094-TM-01	0	1	1	2
1149-TM-01	0	0	1	1
1373-TM-01	2	3	2	7
1377-TM-01	0	0	1	1
1383-TM-01	2	1	0	3
2028-MR-01	0	0	1	1

Table 5. Summary of reduced vs. oxidized environment for Mg-ilmenite grains. A reduced environment is favorable for diamond preservation. The values presented in this table are based on Mg-ilmenite grains picked and submitted to the OGL for microprobe analysis.

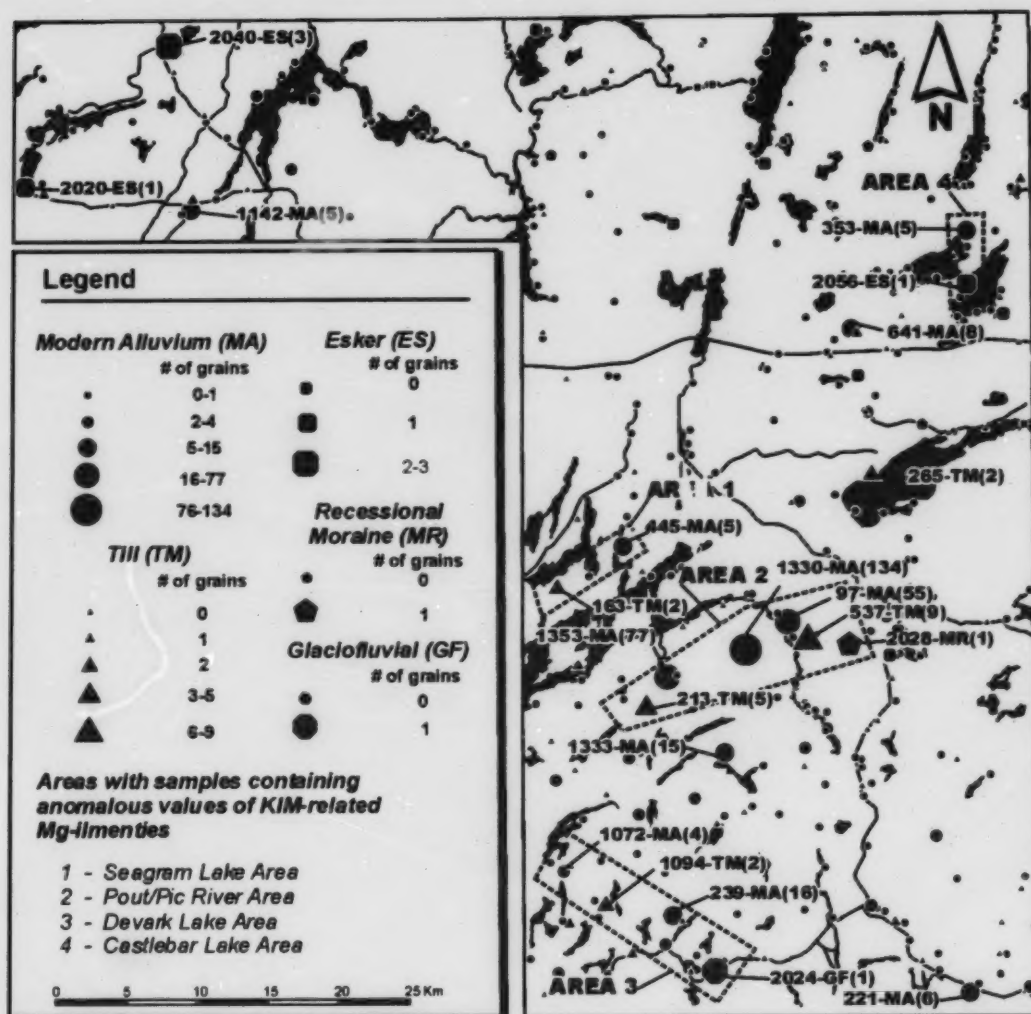


Figure 10. Regional distribution of Mg-ilmenite grains. The number in brackets represents the number of Mg-ilmenite grains recovered from that site. Note that 2 sample sites consist of numbers that are re-calculated estimates (1330-MA-01, 1356-MA-01). For discussion on how values were re-calculated to account for estimated number of grains, see plotting parameter section, this report. The year (-01) has been dropped from the sample number to save space on the diagram.

Cr-diopside

Nine hundred and thirty-four Cr-diopside grains were submitted to the OGL for microprobe analysis. Of these, 211 are of kimberlitic affinity (Figure 11; Morris 2002, Appendix 9). Four hundred and eighty-nine are classified as low Cr-diopsides, 99 as Cr-diopsides, 1 as an augite (?) and 10 as "other" (Morris 2002, Appendix 9). Summary statistics for Cr-diopsides is presented in Table 4.

There are 6 areas where significant concentrations of Cr-diopside with kimberlitic affinity occur (Figure 12). These areas are: 1) Lyons Lake area (1142-Ma-01, 1011-Tm-01, 1036-Tm-01, 2020-Es-01); 2) Roddy Lake area (1186-Tm-01, 2040-Es-01); 3) Chipman Lake area (395-Ma-01, 627-Ma-01, 586-Tm-01, 633-Tm-01); 4) Castlebar Lake area (317-Ma-01, 353-Ma-01, 359-Tm-01); 5) Taffy Lake area (641-Ma-01, 371-Tm-01, 377-Tm-01); and 6) Pout/Pic River area (53-Ma-01, 81-Ma-01, 97-Ma-01, 1353-Ma-01, 2028-Mr-01).

Olivine

Twelve of the 72 olivine grains processed through the OGL microprobe have kimberlitic affinity (Figure 13; Morris 2002, Appendix 9). Summary statistics for olivine data is presented in Table 4.

There are 2 areas with at least 2 samples that consist of significant concentrations of anomalous numbers of forsteritic olivine grains (Figure 14). These areas include: 1) Seagram Lake area (153-Ma-01, 445-Ma-01); and 2) Pout/Pic River area (81-Ma-01, 401-Ma-01).

Recommendations for Kimberlite Exploration

In examining the distribution and compositions of individual KIMs, several sites and related areas were identified as favorable for kimberlite exploration. However, by considering the total number of KIMs at each site, fewer exploration targets of higher quality can be recommended. This may be more desirable in that the recommended exploration areas are based on sample sites containing significant KIMs (e.g., a "G10") or a variety of KIMs (e.g., a "G10", Mg-ilmenite and chromite). Three areas and several sites are proposed for kimberlite exploration (Figure 15, Table 6). Note that some of the values used to determine sites with significant numbers of KIMs were re-calculated to account for an estimated number of grains within the heavy mineral concentrate of some samples. These samples are identified in Table 6.

Determining proximity to source of a sample's heavy mineral signature is difficult in this terrain. Many of the different types of overburden materials within the study area consist of complex transportation and depositional histories. Therefore, it is necessary to consider carefully the types of materials through which a stream is flowing when evaluating a stream sediment sample's heavy mineral signature.

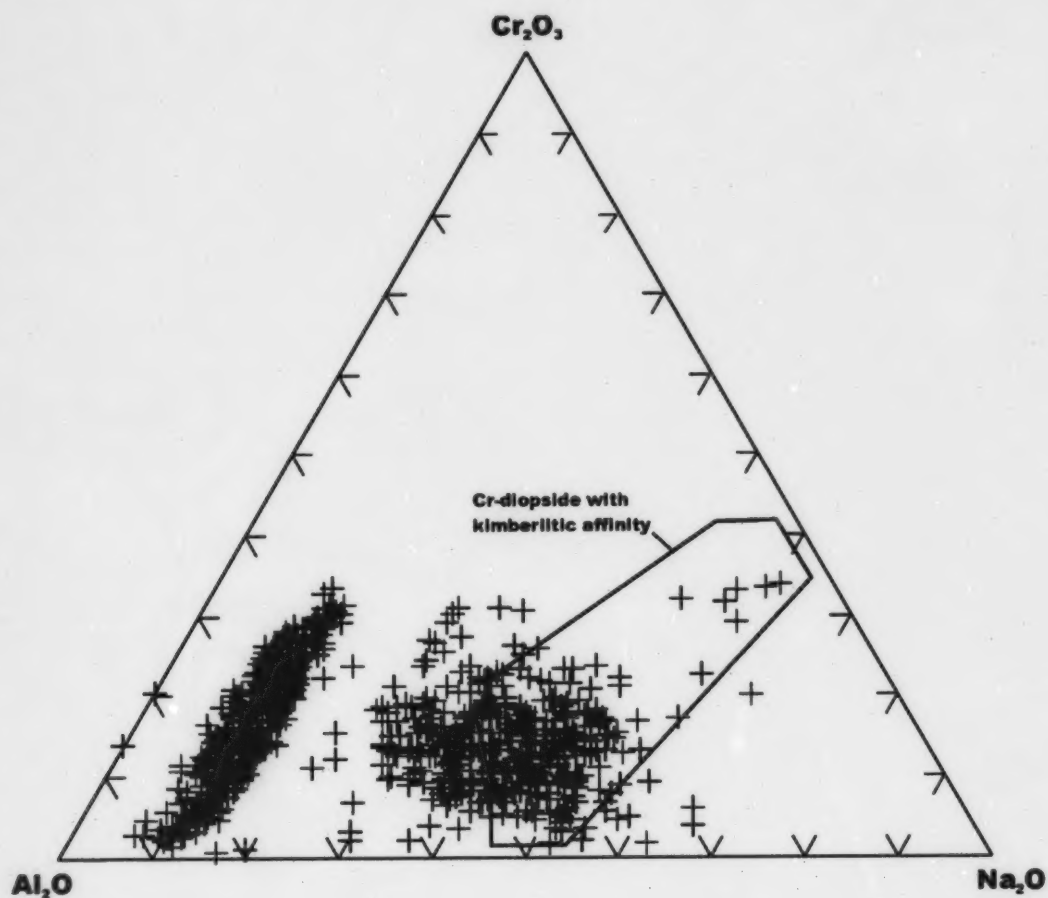
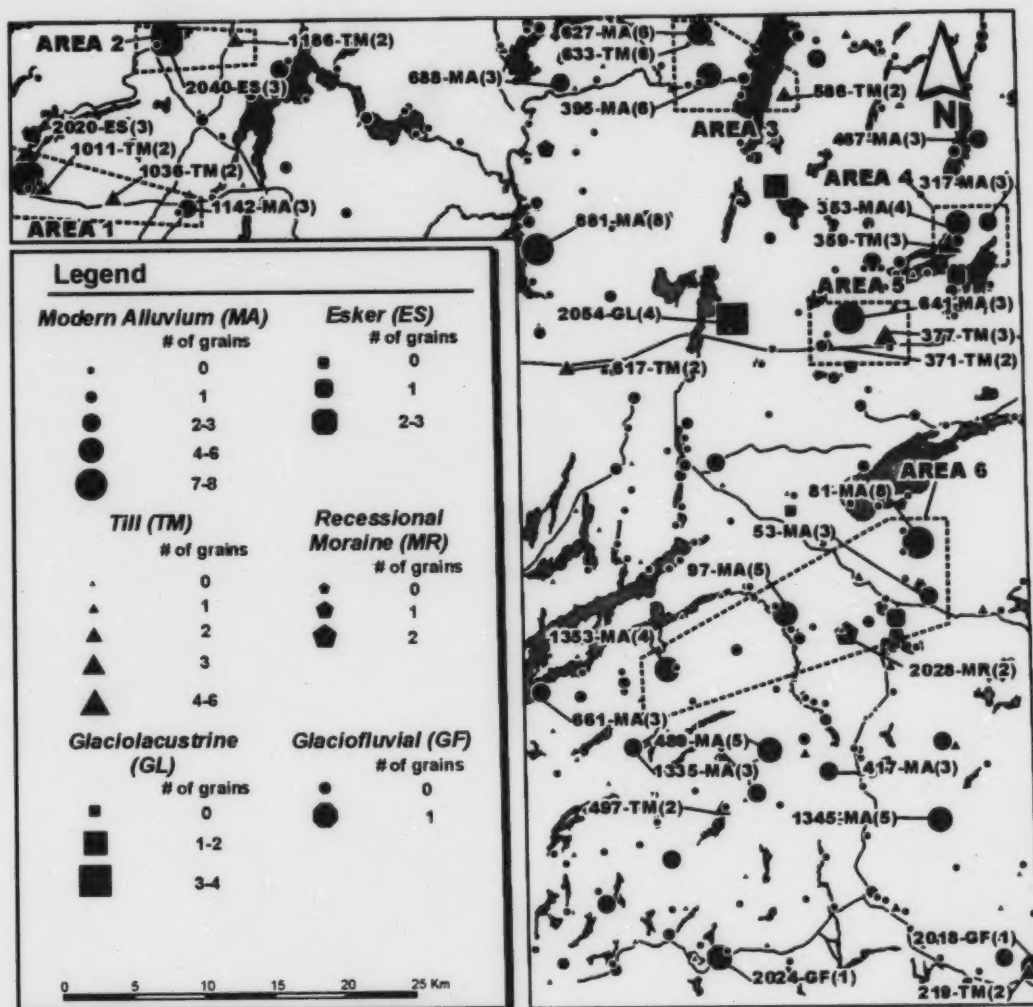


Figure 11. Ternary plot of Cr-diopside data recovered from overburden samples. Template defines those grains that have kimberlite affinity (Morris et al. 2000).



Areas with samples containing anomalous values of KIM-related Cr-diopside

- 1 - Lyons Lake Area
- 2 - Roddy Lake Area
- 3 - Chipman Lake Area
- 4 - Castle Bar Lake Area
- 5 - Taffy Lake Area
- 6 - Pout/Pic River Area

Figure 12. Regional distribution of Cr-diopside grains of kimberlitic affinity. The number in brackets represents the number of Cr-diopside grains recovered from that site. The year (-01) has been dropped from the sample number to save space on the diagram.

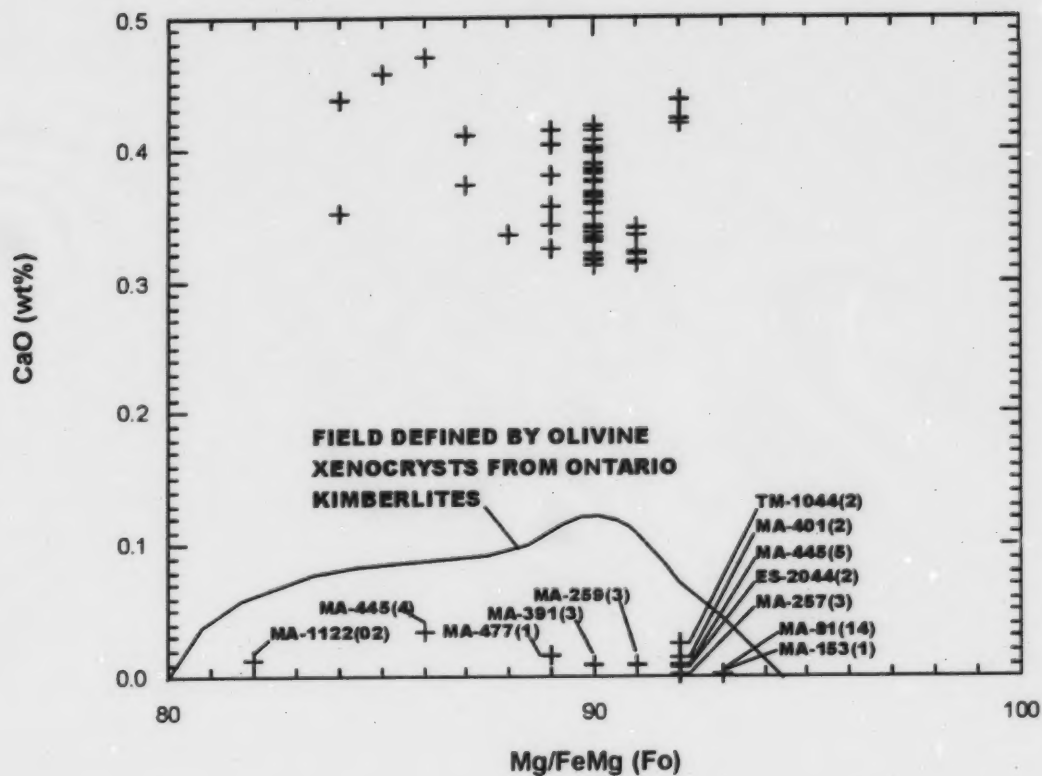


Figure 13. Binary plot of olivine data (after Ontario Geological Survey 2001). Note that only 12 grains are likely derived from a kimberlitic source. See text for discussion. Number in bracket refers to grain's laboratory number. Individual grains values are summarized in Morris (2002).

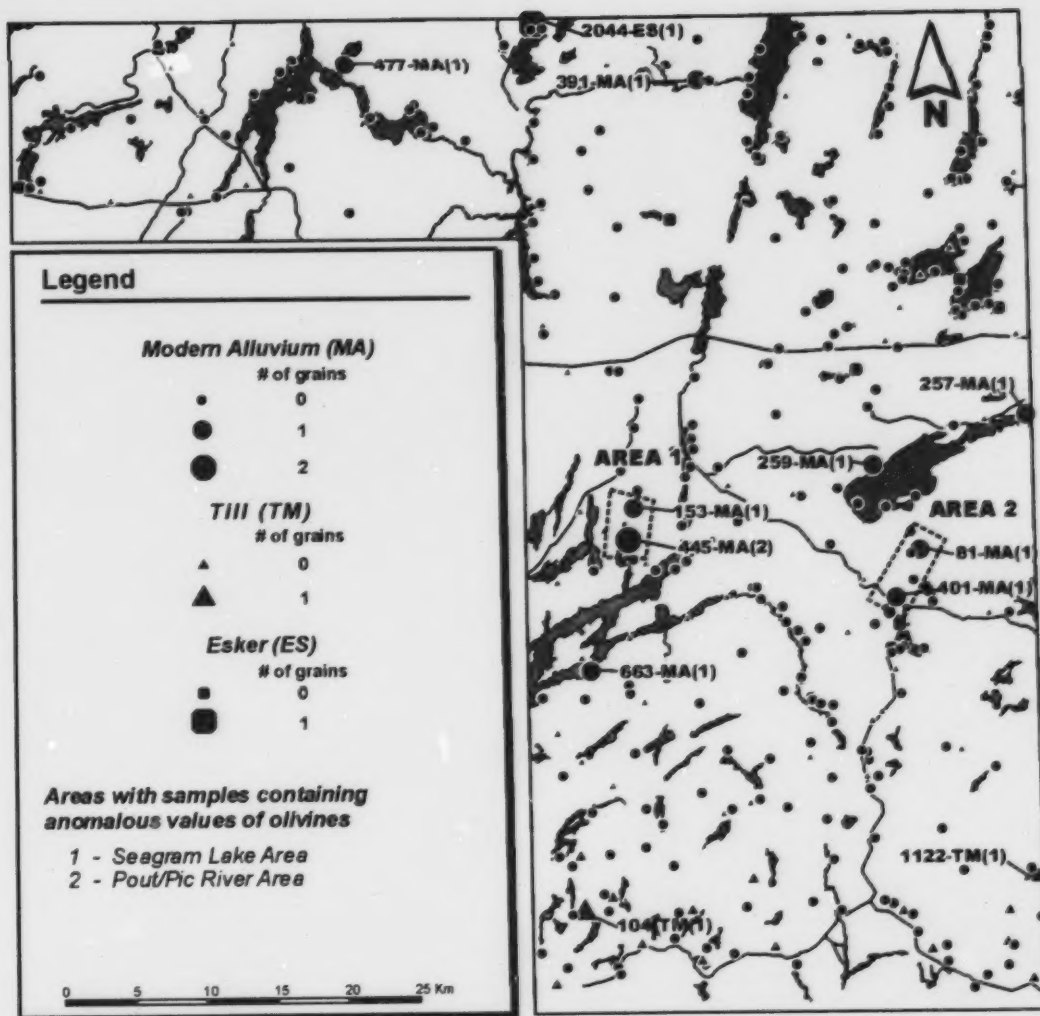
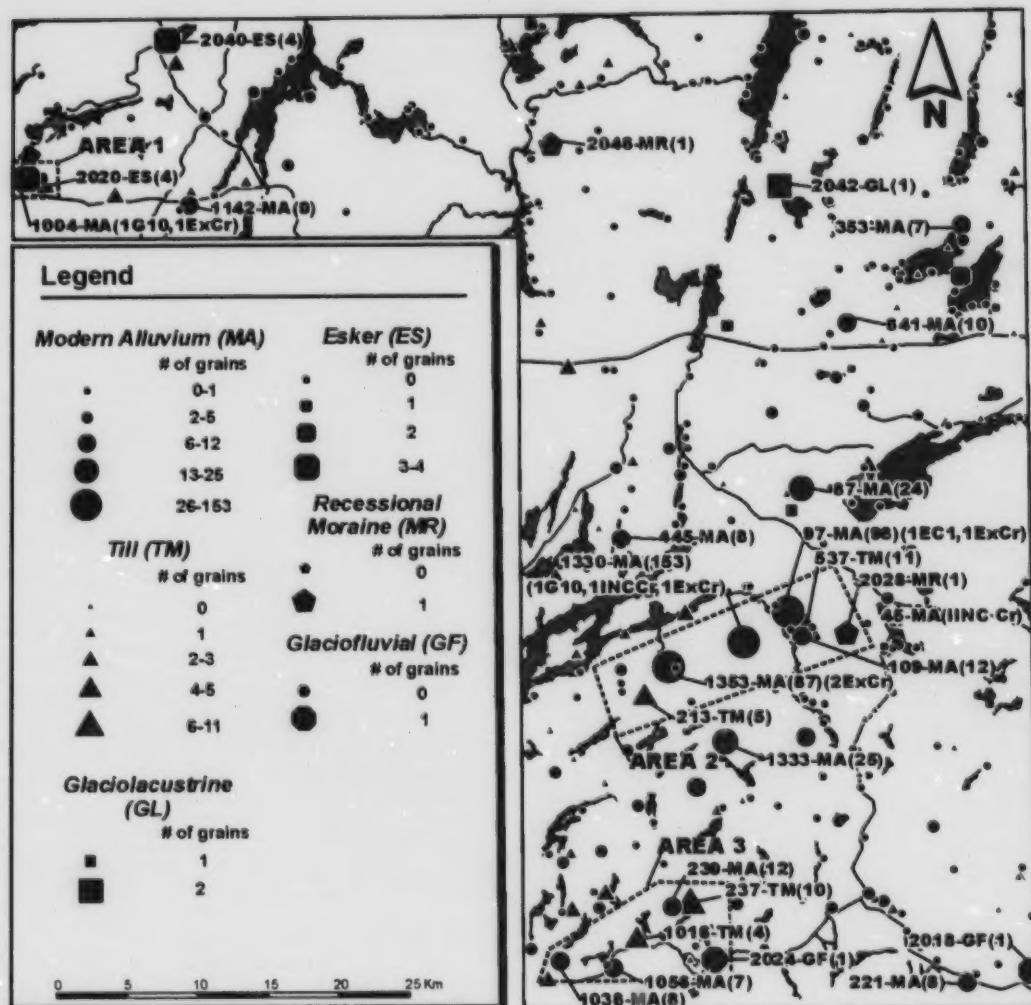


Figure 14. Regional distribution of olivine grains with kimberlitic affinity (see text for discussion). The number in brackets represents the number of forsteritic olivines recovered from that site. The year (-01) has been dropped from the sample number to save space on the diagram.



Areas with samples containing anomalous values of KIM

- 1 - Lyons Lake Area
- 2 - Pout/Pic River Area
- 3 - Devark Lake Area

G10 - G10 Cr-pyropo garnet
 EC1 - Type I eclogite garnet
 INC - Inclusion field chromite
 Ex - Chromite exclusive to
 Lamproite/kimberlite

Figure 15. Regional distribution of total KIMs. Numbered areas are summarized in Table 6 along with significant individual sites. The year (-01) has been dropped from the sample number to save space on the diagram.

Area	Sample	Justification
1) Lyons Lake	1004-Ma-01	1 G10, 1 G9, 1 ExCr
	2020-Es-01	3 Cr, 1 IM
2) Pout/Pic River	45-Ma-01	1 IncCr, 1 IM
	97-Ma-01	18 G9, 1 Ecl, 3 EcII, 15 MEG, 1 ExCr, 1 Cr, 55 IM, 4 DC
	109-Ma-01	5 G9, 7 MEG
	1330-Ma-01	1 G10, 1 G9, 3 MEG, 1 IncCr, 1 ExCr, 3 Cr, 134 IM*
	1353-Ma-01	6 G9, 1 EcII, 2 Ex Cr, 77 IM*, 1 DC
	213-Tm-01	5 IM
	537-Tm-01	1 G9, 1 Cr, 9 IM
	2028-Mr-01	1 IM
3) Devark Lake	239-Ma-01	6 Cr, 6 IM
	1038-Ma-01	6 Cr, 2 IM
	1056-Ma-01	6 Cr, 1 IM
	237-Tm-01	10 Cr
	1016-Tm-01	3 Cr, 1 IM
	2024-Gf-01	1 IM
Individual Sites	87-Ma-01	21 Cr, 3 IM
	221-Ma-01	2 Cr, 6 IM
	353-Ma-01	2 Cr, 5 IM
	445-Ma-01	1 Cr, 5 IM, 2 Fo
	641-Ma-01	2 Cr, 8 IM
	1142-Ma-01	1 G9, 3 Cr, 5 IM
	1333-Ma-01	3 G9, 3 MEG, 4 Cr, 15 IM
	2040-Es-01	1 G9, 3 IM
	2042-Gl-01	1 DC
	2018-Gf-01	1 G9
	2046-Mr-01	1 G9
G10/G9 = Cr-pyrope garnet		ExCr = Chromite exclusive to lamproite/kimberlite
Ecl/ Ec II = Eclogitic garnet		DC = Cr-diopside
MEG = Megacrystic garnet		Im = Mg-ilmenite
Cr = Chromite		Fo = Forsteritic olivine
IncCr = Inclusion field garnet		

Table 6. Recommended areas for kimberlite exploration. Those values with an (*) are based on re-calculating the number of grains picked and submitted to the Ontario Geoscience Laboratories for microprobe analysis, to an estimated number of grains within that sample's heavy mineral concentrate. A summary of the number of grains observed and picked per site as well as those sites with an estimated number of grains are summarized in Appendix 2 (this report). Detailed discussion on how those values were determined is presented in the data plotting parameter section of this report.

As discussed previously, pebble lithology can often be a useful means of determining the proximity of a sample's properties to source. However, for this terrain (as previously discussed) pebble lithology is not particularly useful.

When available, geophysical data can be very useful in evaluating sites with significant numbers of KIMs as kimberlite targets (Morris and Kaszycki 1997). Kimberlite commonly has a circular to ellipsoid magnetic anomaly associated with it. Therefore, the presence of such a geophysical anomaly(ies) occurring up-ice or in close proximity to samples with significant KIM values make those sample sites very interesting exploration targets. Unfortunately in the Longlac area, only geophysical data derived from wide line spacing is available in the area where many of the sites with significant KIM values occur (Geological Survey of Canada 1963a, 1963b, 1963c, 1963d). Nonetheless, a number of magnetic, circular anomalies occur up-ice or in close proximity to sites with significant KIM values.

Another method used to determine proximity to source is to evaluate a grain's surface characteristics, roundness and form or shape (Appendix 3, this report; Morris 2002, Appendix 12a-o). Commonly, pyrope garnets or Mg-ilmenites with alteration surfaces such as kelyphytic or perovskite rinds suggest close proximity to source. These rinds impart an "orange-peel" texture to the grain surface. These rinds are considered soft and do not remain on the grain's surface in the terrestrial environment. A grain with a frosted appearance suggests that the grain has undergone considerable distance of transport.

Much work has been done to characterize a particle's shape. The reader is referred to Stone (2000) for an excellent review of this literature. Essentially, a grain's shape is defined by its roundness and form or shape. Roundness is measured as the ratio of the average radius of the corners of a grain to the radius of a maximum inscribed circle. Form or shape includes aspects of elongation or flatness and sphericity of the grain. Selley (1988) devised a simple classification scheme to describe form and shape based on ratios of the 3 principal axis of a grain. This classification includes spheres, disks, blades and rollers.

Grain roundness is often used in an attempt to define distance of transport of the grain from source. For example, a round grain (Figure 16) may have undergone a greater distance of transport than an angular one (Figure 17). The main problems in using this approach are that: 1) grains can become rounded within the kimberlite magma if partial adsorption occurs due to an oxidizing environment; 2) kimberlite can be transported as float and deposited some distance from the source: when the kimberlite weathers *in situ*, "fresh" KIMs can be released; and 3) grains, such as Cr-pyropes, can actually become more angular with distance of transport because of their brittle nature.

In addition to these problems, the Longlac area consists of some sediments that were transported into the area from elsewhere. Within these materials, "secondary" KIM grains associated with Paleozoic rocks of the Hudson Bay Lowland may exist (S. Averill, Geoscientist, Overburden Drilling Management Limited, personal communication, 2001).



Figure 16. A scanning electron microscope photo of a "G9" Cr-pyrope garnet. Grain is classified as a rounded (very) sphere.



Figure 17. A scanning electron microscope photo of a grossular garnet. Grain is classified as a subangular (angular) roller.

These grains are described as being rounded and frosted. The presence of these grains in local overburden samples is problematic as little is understood about them with regard to their physical properties and transport history.

To define the physical characteristics of heavy minerals recovered in this study, Cr-pyrope grains were photographed on the OGL's scanning electron microscope (SEM). Due to the cost of photographing grains, only Cr-pyrope garnets were photographed as they are considered one of the more important KIMs. Unfortunately, to reduce costs, several grains were photographed on one slide. The scale of the photograph does not allow for detailed evaluation of the grain surface; it allows only for characterization of the grain shape (Morris 2002, Appendix 12a-o).

The SEM has a software package (Link Analytical Limited 1992) capable of measuring grain roundness. A perfect circle is represented by a value of 1. However, the software package does not provide descriptive terms that tie into the numerical values that it generates. Commonly, the roundness of a grain is described as being round, subrounded, subangular or angular. These terms could be applied to each of the grains by subdividing the values provided by the software package (Table 7). By further subdividing these values, a second descriptor, or modifier to the primary term, can be applied to provide a more thorough characterization of the grain shape (Table 7). Using this classification scheme, the grain presented in Figure 16 is classified as a rounded (very) grain and the grain in Figure 17 as a subangular (angular) grain.

Classification	Value
Angular	0.0000- 0.2500
very	0.0000- 0.0850
angular	0.0851- 0.1700
subangular	0.1701- 0.2500

Subrounded	0.5001- 0.7500
subangular	0.5001- 0.5850
subrounded	0.5851- 0.6700
rounded	0.6701- 0.7500

Classification	Value
Subangular	0.2501- 0.5000
angular	0.2501- 0.3350
subangular	0.3351- 0.4200
subrounded	0.4201- 0.5000

Rounded	0.7501- 1.0000
subrounded	0.7501- 0.8350
rounded	0.8351- 0.9200
very	0.9201- 1.0000

Table 7. A grain roundness classification scheme. Values are determined by the Link Analytical Limited (1992) software package installed on the OGL's SEM. These values were then subdivided and a descriptive classification scheme applied. This allows for a quantified, simple description of a grain's shape (see text for discussion).

Furthermore, the grain can be further characterized by form or shape (roller, blade, disk or sphere) based on the classification scheme of Selley (1988). For example, the grain in Figure 16 would be regarded as a sphere, the grain in Figure 17 as a roller.

Keeping in mind the problems of using grain shape to determine a grain's proximity to source, combining grain shape observations with surface feature descriptions (Appendix 3, this report) may provide some insight as to a grain's transport distance from source. For example, grain 2 from sample 351-Ma-01 is described as a rounded, second-cycle grain indicating a complicated transport history and potentially distal source. Using the roundness and form descriptions discussed in this report, the grain is described as a subrounded (rounded) sphere, again suggesting a complicated transport history and potentially distal source. Note, however, the difficulty in comparing the grain shapes of different indicator mineral types. For example, chromite and Mg-ilmenite grains from sample 73-Ma-01 are described as being angular, suggesting a local source. However, the Cr-pyroxene grain from the same sample is described as a rounded (subrounded) disk, suggesting (perhaps) a longer distance of transport. Clearly, more work is required to understand what a specific grain shape means in terms of transport distance.

Metamorphic or Magmatic Massive Sulphide Indicator Minerals

The number and types of MMSIMs[®] picked and observed within samples is summarized in Morris (2002, Appendix 7). Oxide data for the chromite, Cr-diopsides, gahnites and olivines is summarized in Morris (2002, Appendix 9). Summary statistics for each MMSIM[®] are presented in Tables 8a-c. Note that values derived from grains picked for some MMSIMs[®] have been re-calculated to account for estimated number of grains within a sample's heavy mineral concentrate.

Of special significance was the recovery of 4 gahnite grains. These grains were recovered from till (712-Tm-08, 724-Tm-02, 1138-Tm-02) and from a modern alluvium sample (1345-Ma-14). The oxide data of the 3 grains recovered from till indicate that they were derived from a Geco or Mattabi type environment (Morris et al. 1997). The oxide data for the other grain indicates that it is derived from rare element pegmatite (Morris et al. 1997) and is not included in the base metal data base.

Recommendations for Base Metal Exploration

Presenting a proportional dot diagram for each MMSIM[®] is not practical due to the large number of individual MMSIMs[®] recovered. Instead, a summary MMSIM[®] proportional dot diagram is presented. As discussed in the Data Plotting Parameter section of this report, this summary MMSIM[®] diagram is not based on total numbers of MMSIM[®] grains. Instead, the sites were ranked depending upon the number of sites with individual MMSIM[®] values that were deemed significant.

It is very difficult to define distinct areas favorable for base metal exploration from the distribution of ranked MMSIM[®] data. One possible interpretation of favorable exploration target areas is presented in Figure 18 and summarized in Table 9. Although it is possible to explain why some areas and individual sample sites may be very good areas to explore for base metals, others are not well explained. For example, the Castiebar Lake

Mineral (Grain)	General Statistics					
	Number of Sample Sites		Total		Maximum	
	With Grains		Grains		per	
	MA	Till	MA	Till	MA	Till
Arsenopyrite	1	1	1	1	1	1
Chalcopyrite	47	6	122	6	14	1
Corundum	3	0	4	0	2	0
Chromite*	46	15	118	28	21	10
Ruby corundum	14	2	14	2	1	1
Galena	1	0	1	0	1	0
Gahnite	0	2	0	2	0	1
Grossular	5	0	5	0	1	0
Cr-diopside*	85	29	374	275	110	86
Loellingite	1	0	1	0	1	0
Mn-epidote	12	2	14	2	3	1
Molybdenite	12	0	29	0	10	0
Native Gold	56	29	88	100	5	8
Olivine	5	1	13	382*	5	383*
Pyrite*	117	23	11124	718	2000	400
Red Rutile	6	8	6	10	1	2
Spinel	33	10	39	10	3	1
Tourmaline	2	0	2	0	1	0

Mineral (%)	General Statistics					
	Number of Sample Sites		Average Percentage,		Maximum	
	With Grains		Grains per Sample		per	
	MA	Till	MA	Till	MA	Till
Anthophyllite	1	0	0.12	0	30	0
Goethite	109	48	0.89	0.36	90	5
Kyanite	199	76	0.3	0.31	5	2
Orthopyroxene	192	70	1.26	1.54	20	8
Sillimanite	57	25	0.06	0.08	0.25	0.25
Spessartine	4	2	0.01	0.01	2	0.25
Staurolite	159	57	0.24	0.24	3	2

Table 8a. Summary statistics for MMSIMs[®] recovered from modern alluvium and till samples. An (*) indicates that the value associated with that MMSIM[®] is recalculated to an estimated number of grains within that sample's heavy mineral concentrate. A summary of the number of grains picked vs. the number of grains estimated within a sample's heavy mineral concentrate is summarized in Appendix 2 (this report). Detailed discussion on how estimated numbers of grains were determined is summarized in the Data Plotting Parameter section of this report.

Mineral (Grain)	General Statistics					
	Number of Sample Sites With Grains		Total Grains		Maximum per Sample Site	
	Eskers	Glacio- lacustrine	Eskers	Glacio- lacustrine	Eskers	Glacio- lacustrine
Chalcopyrite	3	0	9	0	7	0
Chromite	1	0	3	0	3	0
Cr-diopside	6	2	14	5	5	3
Mn-epidote	0	1	0	1	0	1
Native Gold	0	2	0	3	0	1
Pyrite	5	1	34*	3	15	3
Red Rutile	2	1	2	2	1	2
Spinel	2	1	4	1	3	1

Mineral (%)	General Statistics					
	Number of Sample Sites With Grains		Average Percentage, Grains per Sample		Maximum per Sample Site	
	Eskers	Glacio- lacustrine	Eskers	Glacio- lacustrine	Eskers	Glacio- lacustrine
Goethite	9	3	7	1.5	2	0.25
Kyanite	8	3	2	0.75	0.25	0.25
Orthopyroxene	10	3	14.75	5.25	5	3
Sillimanite	5	3	1.25	0.75	0.25	0.25
Staurolite	9	3	2.25	1	0.25	0.5

Table 8b. Summary statistics for MMSIMs[®] recovered from esker and coarse-grained glaciolacustrine samples.

area has a number of sites with anomalous MMSIM[®] values that are associated directly with mafic metavolcanic terrane or associated bedrock contacts. The Pout/Pic River area, however, is situated in the middle of a metasedimentary terrane. There are 3 possible explanations to explain anomalous MMSIMs[®] values in this type of terrane: 1) that there is mineralization associated with this metasedimentary bedrock terrane; 2) there are/is (an)other significant, mineralized bedrock unit(s), not yet delineated in this area; or 3) there is another interpretation for this data.

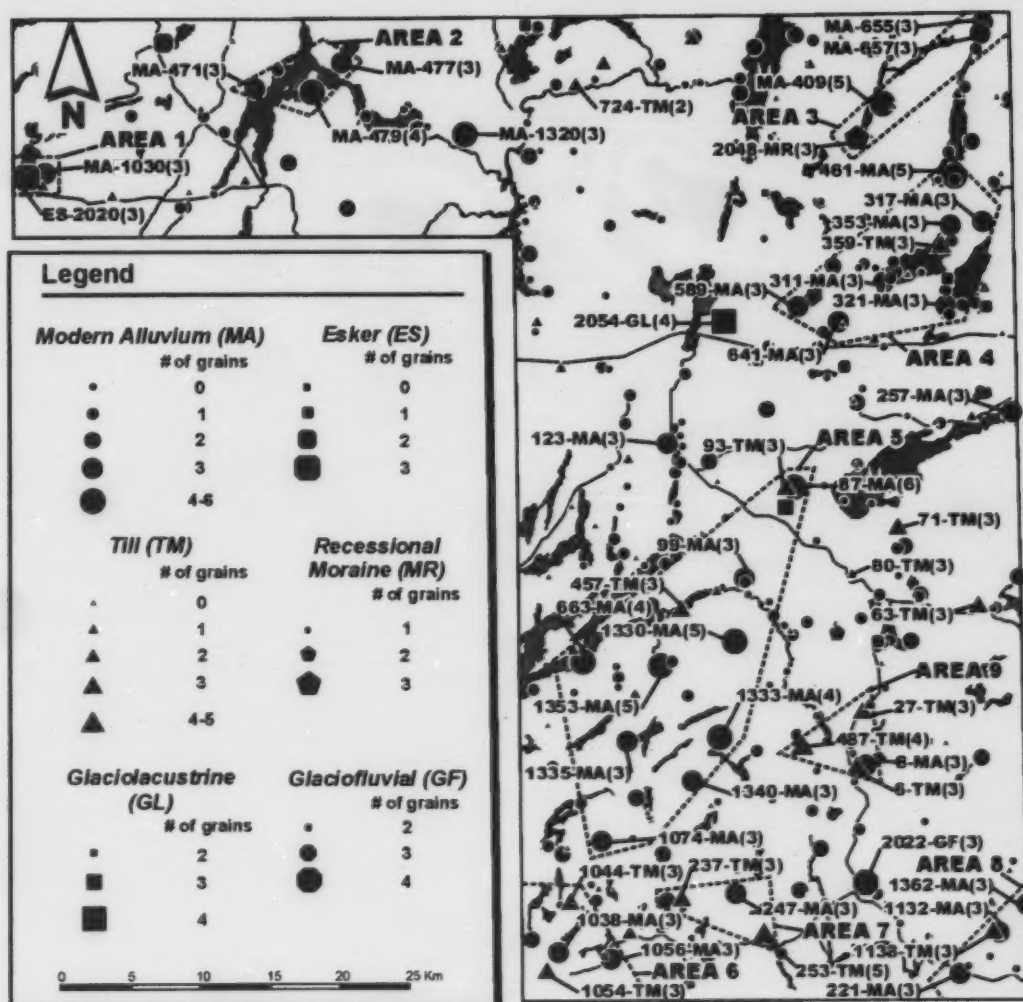
The base metal targets proposed here may be excellent exploration targets, however, caution is advised for the following reasons. Samples regarded as potential exploration targets consist of MMSIM[®] values that are fairly low (see Table 9). In addition, the types of MMSIMs[®] are widely variable from site to site. As mentioned, it is

Mineral (Grain)	General Statistics					
	Number of Sample Sites With Grains		Total Grains		Maximum per Sample Site	
	Glacio- fluvial	Recessional Moraine	Glacio- fluvial	Recessional Moraine	Glacio- fluvial	Recessional Moraine
Cr-diopside	1	3	2	5	2	2
Mn-epidote	2	0	4	0	3	0
Native Gold	1	0	0	3	0	3
Pyrite	2	3	5	11	4	8
Ruby Corundum	1	0	1	0	1	0
Spinel	1	1	2	1	2	1

Mineral (%)	General Statistics					
	Number of Sample Sites With Grains		Average Percentage, Grains per Sample		Maximum per Sample Site	
	Glacio- fluvial	Recessional Moraine	Glacio- fluvial	Recessional Moraine	Glacio- fluvial	Recessional Moraine
Goethite	3	4	0.75	4	0.25	2
Kyanite	2	3	0.5	0.75	0.25	0.25
Orthopyroxene	3	4	2.5	6.25	2	3
Sillimanite	3	2	0.75	0.5	0.25	0.25
Staurolite	2	4	0.5	1	0.25	0.25

Table 8c. Summary statistics for MMSIMs[®] recovered from glaciofluvial and recessional moraine samples.

very difficult to easily delineate base metal exploration targets based on the distribution of the ranked MMSIM[®] data. Many of the areas proposed in this report are based on a number of samples collected from over a broad area. An alternative way to examine the data is by contouring the MMSIM[®] values. When the data is contoured, there is a notable band of samples with significant, ranked MMSIM[®] values trending southwest across the study area: the direction of ice flow (Figure 19). This suggests that significant MMSIM[®] values through the region may be due to glacial dispersal through either regional flow or ice streaming from a source located to the northeast. The source may be associated with the migmatized metasedimentary or mafic metavolcanic terrane in the Club and Castlebar lakes areas. Alternatively, these significant MMSIM[®] values may mimic the orientation of a structural trend (i.e. a fault). However, more research is required to substantiate these suggestions.



Areas with samples containing anomalous MMSIM ranked values

- | | |
|---------------------|-----------------------|
| 1 - Lyons Lake Area | 2 - Burrows Lake Area |
| 3 - Cub Lake | 4 - Castlebar Lake |
| 5 - Pout/Pic River | 6 - Deerskull Lake |
| 7 - Spiderwort Lake | 8 - Waco Lake |
| 9 - Bluejay Lake | |

Figure 18. Regional distribution of MMSIM grains. Value in brackets indicates the number of MMSIMs recovered from that site. Application of the ranking system is discussed in the Plotting Parameter Section of this report. The year (-01) has been dropped from the sample number to save space on the diagram.

Area	Samples	Justification
1) Lyons Lake	1030-Ma-01	2 Ch, 2 Cr, 1 Cru, 5 Py, 0.25 Ky, Or, Si, St
	2020-Es-01	7 Ch, 3 Cr, 15 Py*, 1 LDC, 0.25 Gth, Ky, Or
2) Burrows Lake	471-Ma-01	2 Co, 1 Cru, 1 Ky, 1 Cr, 1 Or, 0.25 Gth, St
	477-Ma-01	2 Ch, 1 Ky, 2 St, 4 Or, 9 Py, 0.25 Si
	479-Ma-01	2 Cr, 1 Ky, 1 Sp, 2 St, 1 LDC, 2 Or, 1 Py, 0.25 Gth, Si
3) Club Lake	409-Ma-01	3 Ch, 1 Cru, 1 Mo, 1 Rr, 1 Sp, 1 LDC, 1 Or, 20 Py, 0.25 Gth, Ky, St
	655-Ma-01	4 LDC, 5 Or, 2 Sp, 1 Ch, 7 Py, 0.25 Ky, St
	657-Ma-01	1 Ky, 5 Or, 1 Sp, 1 Cr, 1 LDC, 4 Py, 0.25 Gth, St
	2048-Mr-01	3 Ng, 3 Or, 8 Py, 1 Gth, 0.25 Si, St
4) Castlebar Lake	311-Ma-01	3 Ky, 3 Ng, 5 Or, 0.25 Gth
	317-Ma-01	13 Ch, 2000 Py*, 0.25 Sps, 0.25 Gth, Ky, Or, St
	321-Ma-01	1 Gth, 1 Ky, 3 Ng, 1 Or
	353-Ma-01	2 Ch, 3 Cr, 3 Ng, 1 Or, 10 Py, 0.25 Gth, Ky, St
	461-Ma-01	3 Cr, 1 Cru, 1 Ky, 2 Sp, 1 Tour, 3 Or, 0.5 St
	589-Ma-01	1 Cru, 3 Ng, 1 Sp, 0.25 Ky, Or
	641-Ma-01	2 Ch, 2 Cr, 7 LDC, 2 Or, 30 Py, 0.25 Gth, Ky, St
	359-Tm-01	1 Ch, 3 LDC, 0.25 Sps, 2 Ng, 1 Or, 0.25 Gth, Ky, St
<i>Grains</i>		<i>Grains</i>
Arsenopyrite; Ar		Pyrite; Py
Chalcopyrite; Ch		Red Rutile; Rr
Corundum; Co		Spinel; Sp
Chromite; Cr		Tourmaline; Tou
Ruby Corundum; Cru		
Gahnite; Gah		<i>Percentage in Concentrate</i>
Grossular; Gr		Anthophyllite; An
Low Cr-diopside; LDC		Goethite; Gth
Loellingite; Lo		Kyanite; Ky
Mn-epidote; Me		Orthopyroxene; Or
Molybdenite; Mo		Sillimanite; Si
Native Gold; Ng		Spessartine; Sps
Olivine; Ol		Staurolite; St

Table 9. Recommended areas for base metal exploration. Those values with an (*) are based on re-calculating the number of grains, picked and submitted to the OGL for microprobe analysis, to an estimated value of the number of grains within that sample's heavy mineral concentrate. A summary of the number of grains observed and picked per site versus the number of estimated number of grains is summarized in Appendix 2 (this report). Detailed discussion on how these values were determined is presented in the data plotting parameter section of this report.

Table 9. Recommended areas for base metal exploration (Continued).

Area	Samples	Justification
5) Pout/Pic River	87-Ma-01	21 Cr*, 1 Lo, 1 Me, 2 Ng, 400 Py*, 1 Sp, 1 Ch, 3 LDC, 0.25 Gth, Ky, Or, Si, St
	99-Ma-01	30 An*, 2 Ch, 1 Mo, 2 Or, 40 Py, 0.25 St
	663-Ma-01	3 Ch, 7 Mo, 1 Ol, 800 Py*, 0.25 Gth, Ky, Or, Si, St
	1074-Ma-01	3 Cr, 37 LDC*, 5 Ol, 1 Or, 0.25 Si, St
	1330-Ma-01	4 Ch, 10 Cr, 1 Gr, 9 LDC, 3 Me, 0.5 Ky, 120 Py*, 0.25 Gth, Or, Si, St
	1333-Ma-01	4 Cr, 1 Cru, 3 Gr, 1 Mo, 0.5 Ky, 1 Py, 0.25 St
	1335-Ma-01	4 LDC, 1 Ol, 1 Sp, 1 Cr, 50 Py, 0.25 Gth, Ky, Or, St
	1340-Ma-01	1 Ol, 5 Or, 2 St, 2 LDC, 0.25 Ky, Si
	1353-Ma-01	1 Cru, 1 Gr, 4 LDC, 1 Sp, 1 St, 2 Or, 20 Py*, 0.25 Gth, Ky,
	93-Tm-01	2 Cr, 8 Ng, 1 Sp, 0.5 Or, 0.25 Gth, Ky
	457-Tm-01	2 Cr, 7 Or, 2 Rr, 0.25 Ky, Si, St

6) Deerskull Lake	1038-Ma-01	6 Cr, 19 LDC*, 2 Sp, 1 Ch, 0.25 Gth, Ky, Or, Si, St, 1 Ng, 3 Py
	1056-Ma-01	6 Cr, 23 LDC*, 1 Mo, 0.25 Gth, Or, St
	1044-Tm-01	1 Ch, 400 Py*, 1 Ar, Ky, 1 LDC, 2 Or, 0.25 Gth
	1054-Tm-01	3 Cr, 30 Py*, 3 Rr, 1 LDC, 2 Ng, 2 Or, 0.25 Gth, Ky, St

7) Spiderwort Lake	247-Ma-01	4 Cr, 1 Me, 2 Sps, 2 Or, 0.25 Ky, St
	237-Tm-01	10 Cr*, 86 LDC*, 382 Ol*, 0.25 Ky, Or, St
	253-Tm-01	1 Ky, 1 Me, 0.25 Sps, 1 Sp, 2 St, 1 LDC, 5 Or

8) Waco Lake	221-Ma-01	2 Cr, 4 LDC, 200 Py*, 1 Ch, 0.25 Gth, Ky, Or, Si, St
	1132-Ma-01	1 Rr, 1 Sp, 2 St, 0.5 Ky, 3 LDC, 0.25 Or, Si
	1362-Ma-01	Cru, 1 Me, 1 Rr, 1 Ch, 3 LDC, 1 Py, 0.25 Gth, Ky, Or, St
	1138-Tm-01	1 Gah, 1 Ky, 1 Rr, 6 Py, 0.25 Si

9) Bluejay Lake	8-Ma-01	2 Ky, 1 Sp, 1 St, 1 LDC, 2 Or, 0.25 Gth
	6-Tm-01	2 Gth, 200 Py*, 1 St, 4 Ng, 4 Or,
	27-Tm-01	1 Ky, 15 Py, 1 Sp, 1 Ng, 3 Or, 0.25 Gth, St
	487-Tm-01	1 Cru, 2 Gth, 1 Sp, 1 St, 2 LDC, 1 Or, 1 Py, 0.25 Ky, Si

Individual Sites	123-Ma-01	2 Cr, 1 Me, 2 Sp, 2 LDC, 3 Or,
	1320-Ma-01	3 Ch, 1 Cru, 2 Mo, 200 Py*, 0.25 Ky, Or, St
	63-Tm-01	1 Rr, 1 Sp, 2 St, 1 Ng, 0.5 Gth, 0.25 Ky, Or, Si
	71-Tm-01	1 Ch, 2 Ky, 8 Or, 1 LDC, 2 Py, 0.25 Gth, Si, St
	80-Tm-01	1 Ch, 2 Ky, 8 Or, 2 Py, 0.25 Gth, Si, St
	724-Tm-01	1 Gah, 5 Or, 0.25 St
	2054-Gl-01	1 Me, 3 Or, 2 Rr, 1 Sp, 2 LDC, 0.25 Gth, Ky, Si, St
	2022-Gf-01	2 Ldc, 3 Me, 2 Sp, 2 Or, 0.25 Gth, Ky, Si, St

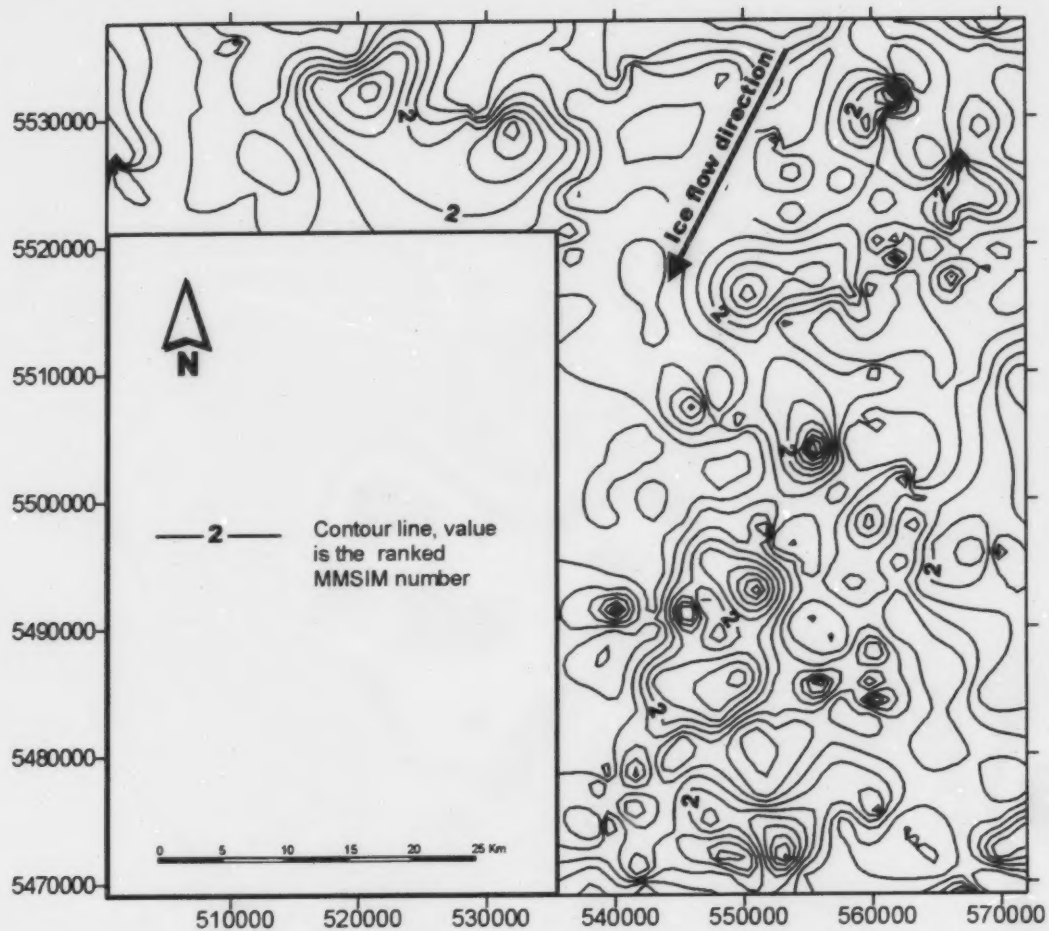


Figure 19. Contour map of ranked MMSIM values for all sample types. Note the strong northeast to southwest trend in the data, mimicking the direction of ice flow. See text for discussion.

Gold

The number of gold grains recovered in this study, when compared to other similar studies, is relatively small (Bajc 1994, 1999; Bernier 1994) (Table 10). Most gold grains recovered from samples were reshaped suggesting some distance of transport from source. However, 2 areas (Castlebar Lake and Seagram Lake) have a number of samples with modest numbers of gold grains directly associated with mafic metavolcanic terrane and/or contacts with this and other bedrock terranes (Figure 20, Table 11).

MEDIA	GENERAL STATISTICS			
	Total Grains	Max.	Min.	Mean
Modern Alluvium				
Total	89	5	0	0.37
Re-shaped	86	4	0	0.35
Modified	1	1	0	0
Pristine	2	1	0	0.01
Till				
Total	100	8	0	1.25
Re-shaped	91	7	0	1.14
Modified	3	1	0	0.04
Pristine	6	3	0	0.08
Glaciolacustrine				
Total	4	3	0	1.33
Re-shaped	4	3	0	1.33
Modified	0	0	0	0
Pristine	0	0	0	0
Recessional Moraine				
Total	3	3	0	0.75
Re-shaped	2	2	0	0.5
Modified	1	1	0	0.25
Pristine	0	0	0	0

Table 10. Summary statistics for gold grains. Values presented are based on the number of gold grains observed.

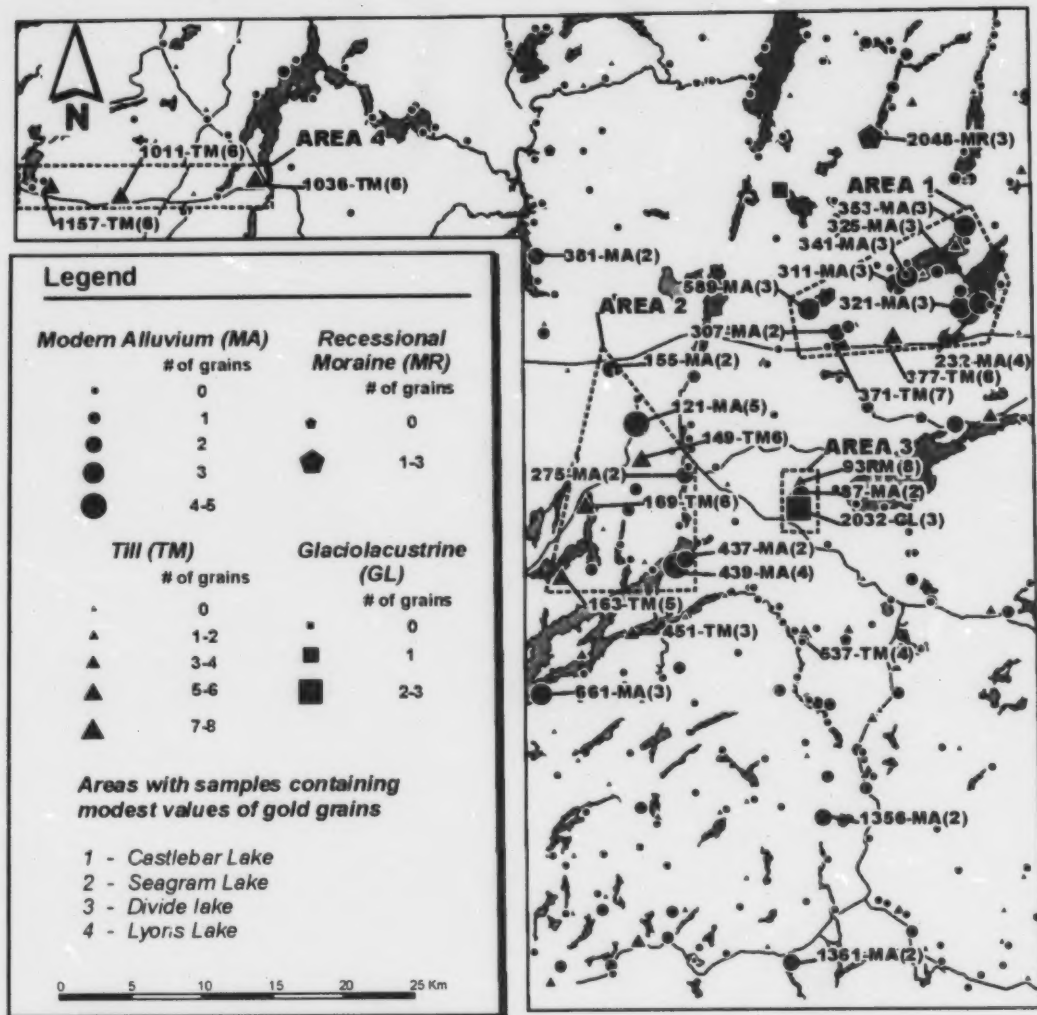


Figure 20. Distribution of gold grains. The number in brackets represents the total number of gold grains observed at that site. The year (-01) has been dropped from the sample number to save space on the diagram.

Area	Sample	Justification
1) Castlebar Lake	307-Ma-01	2 Rs
	311-Ma-01	3 Rs
	321-Ma-01	3 Rs
	323-Ma-01	4 Rs
	325-Ma-01	3 Rs
	341-Ma-01	3 Rs
	353-Ma-01	3 Rs
	589-Ma-01	3 Rs
	371-Tm-01	7 Rs
	377-Ma-01	6 Rs
3) Divide Creek	2032-Gl-01	3 Rs
	87-Ma-01	2 Rs
	93-Tm-01	7 Rs, 1 Pr
4) Lyons Lake	1011-Tm-01	6 Rs
	1036-Tm-01	6 Rs
	1157-Tm-01	6 Rs
Individual Sites	381-Ma-01	2 Rs
	509-Ma-01	1 Rs, 1 Pr
	661-Ma-01	2 Rs, 1 Mo
	1356-Ma-01	2 Rs
	1361-Ma-01	2 Rs
	2048-Mr-01	2 Rs, 1 Mo
	451-Tm-01	2 Rs, 1 Mo
	537-Tm-01	3 Rs, 1 Mo

Pr = Pristine

Mo = Modified

Rs = Reshaped

Table 11. Areas or sites with modest numbers of gold grains.

Carbonatite

Very few carbonatite-related heavy minerals were recovered from overburden samples (Table 12). Some of these indicator minerals are associated with major faults, such as 97-Ma-01. However, there are far too few indicator minerals and the sites which they were recovered from are too broadly dispersed to suggest any potential rare earth element carbonatite exploration targets (Figure 21).

Sample Number	Grain Type, Number	Sample Number	Grain Type, Number
MA-01-97	1 Niobium-Perovskite	MA-01-605	1 Titanite
MA-01-247	1 Perovskite	MA-01-738	1 Perovskite
MA-01-259	1 Titanite	MA-01-1345	1 Gahnite
		TM-01-169	1 Hedenbergite

Table 12. Summary of the number and type of carbonatite indicator minerals.

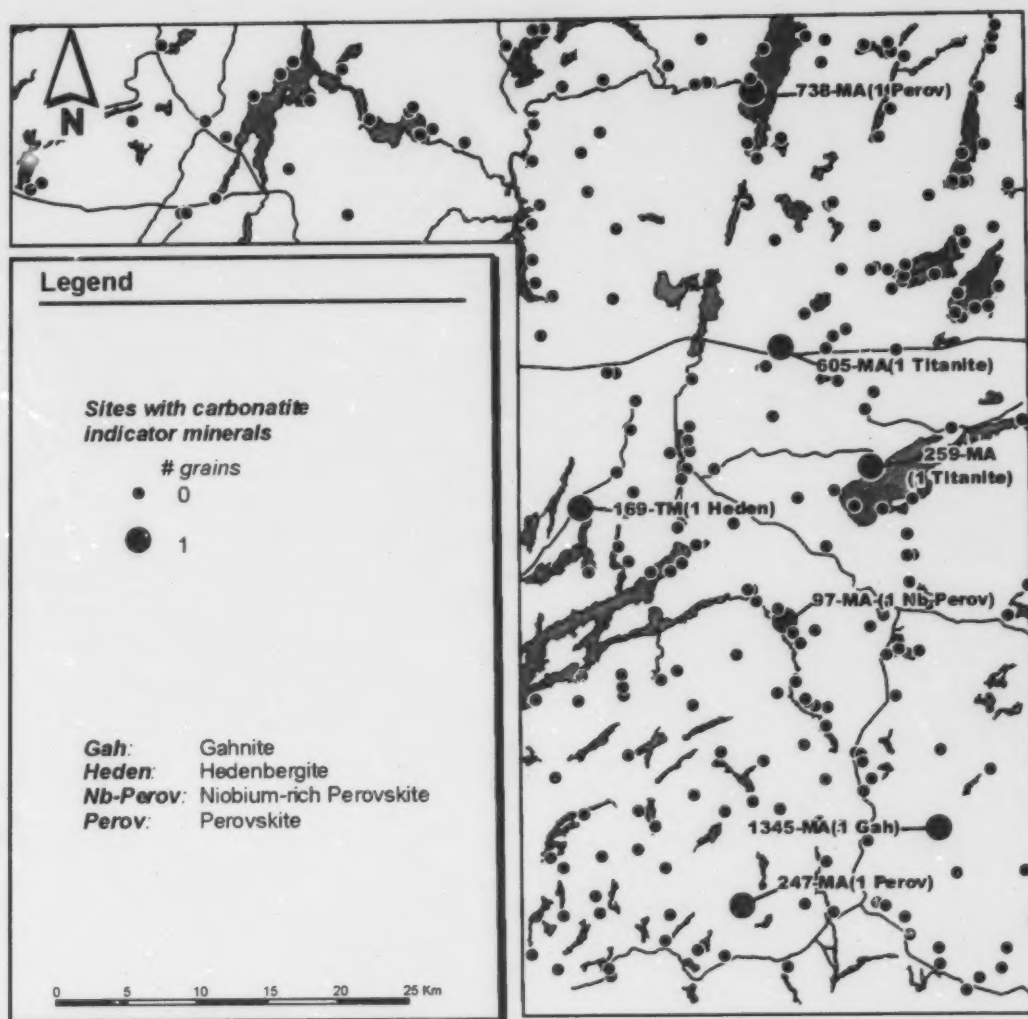


Figure 21. Distribution of carbonatite indicator minerals. Number in brackets indicates number of grains recovered from that sample site. The year (-01) has been dropped from the sample number to save space on the diagram.

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APPENDIX 1: Sample Site Locations

Summary List of Abbreviations

Di:	Diorite-monzonite-granodiorite suite
Es:	Esker
Esp:	Esker pebbles
Fm:	Felsic Metavolcanic rocks
Gf:	Glaciofluvial
Gfp:	Glaciofluvial pebbles
Gl:	Glaciolacustrine
Glp:	Glaciolacustrine pebbles
Gm:	Muscovite-bearing granitic rocks
Gr:	Granitic rocks
Ma:	Modern alluvium
Map:	Modern alluvium pebbles
Mg:	Migmatized supracrustal rocks
Mr:	Recessional moraine
Mrp:	Recessional moraine pebbles
Mt:	Metasedimentary rocks
Mv:	Mafic Metavolcanic rocks
Tm:	Till
Tp:	Till pebbles
To:	Foliated tonalite suite

APPENDIX 1: Sample Site Locations

Modern Alluvium

Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing	

1-Ma-01	559926	5483175	Mt
2-Map-01	559926	5483175	Mt
8-Ma-01	560485	5484069	Mt
9-Map-01	560485	5484069	Mt
10-Ma-01	559828	5485250	Mt
11-Map-01	559828	5485250	Mt
12-Ma-01	559731	5485814	Mt
13-Map-01	559731	5485814	Mt
14-Ma-01	559352	5485930	Mt
21-Ma-01	562181	5489925	Mt
22-Map-01	562181	5489925	Mt
35-Ma-01	561548	5492854	Mt
36-Map-01	561548	5492854	Mt
37-Ma-01	556510	5494605	Mt
38-Map-01	556510	5494605	Mt
45-Ma-01	562436	5493260	Mt
46-Map-01	562436	5493260	Mt
47-Ma-01	562147	5493082	Mt
48-Map-01	562147	5493082	Mt
49-Ma-01	563865	5493110	Mt
50-Map-01	563865	5493110	Mt
51-Ma-01	564553	5496481	Mt
52-Map-01	564553	5496481	Mt
53-Ma-01	564553	5496481	Mt
55-Ma-01	570111	5495628	Mt
57-Ma-01	569973	5495685	Mt
65-Ma-00	563033	5501435	Mt
66-Map-01	563033	5501435	Mt
73-Ma-01	563047	5499935	Mt
74-Map-01	563047	5499935	Mt
81-Ma-01	563449	5499941	Mt
83-Ma-01	563167	5498019	Mt
85-Ma-01	557307	5500564	Mt
87-Ma-01	555288	5504012	Mt
95-Ma-01	554958	5494458	Mt
97-Ma-01	554116	5495054	Mt
99-Ma-01	551778	5497525	Mt
101-Ma-01	552058	5497531	Mt
103-Ma-01	552376	5496699	Mt
105-Ma-01	553880	5496149	Mt
107-Ma-01	555479	5493709	Mt
109-Ma-01	555479	5493709	Mt
111-Ma-01	555150	5490949	Mt
113-Ma-01	555146	5491160	Mt

Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing	

115-Ma-01	555819	5489759	Mt
117-Ma-01	555917	5489531	Mt
119-Ma-01	556511	5489253	Mt
121-Ma-01	543509	5508948	Mv
122-Map-01	543509	5508948	Mv
123-Ma-01	546287	5507295	Di
124-Map-01	546287	5507295	Di
125-Ma-01	542540	5505931	Di
139-Ma-01	557367	5489130	Mt
141-Ma-01	557255	5487822	Mt
142-Map-01	557255	5487822	Mt
143-Ma-01	557263	5487917	Mt
144-Map-01	557263	5487917	Mt
151-Ma-01	543711	5504512	Di
152-Map-01	543711	5504512	Di
153-Ma-01	543201	5503034	Mt
154-Map-01	543201	5503034	Mt
155-Ma-01	541871	5513015	Di
157-Ma-01	540550	5498806	Mt
177-Ma-01	542448	5512956	Di
179-Ma-01	549423	5506109	Mt
180-Map-01	549423	5506109	Mt
181-Ma-01	539827	5489671	Mt
182-Map-01	539827	5489671	Mt
201-Ma-01	538202	5484251	Mt
202-Map-01	538202	5484251	Mt
203-Ma-01	542950	5490654	Mt
204-Map-01	542950	5490654	Mt
205-Ma-01	543016	5490063	Mt
206-Map-01	543016	5490063	Mt
207-Ma-01	542866	5491516	Mt
221-Ma-01	567120	5469023	Mt
222-Map-01	567120	5469023	Mt
223-Ma-01	565275	5470895	Mt
224-Map-01	565275	5470895	Mt
225-Ma-01	565199	5472033	Mt
239-Ma-01	546246	5474466	Mt
240-Map-01	546246	5474466	Mt
247-Ma-01	551067	5474841	Mt
248-Map-01	551067	5474841	Mt
255-Ma-01	557755	5474586	Mt
256-Map-01	557755	5474586	Mt
257-Ma-01	571146	5509524	Gm
259-Ma-01	560189	5506004	Mt

APPENDIX 1: Sample Site Locations (Continued)
Modern Alluvium (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing	

260-Map-01	560189	5506004	Mt
267-Ma-01	557882	5504539	Mt
269-Ma-01	559313	5503437	Mt
271-Ma-01	561271	5503221	Mt
272-Map-01	561271	5503221	Mt
273-Ma-01	563420	5503952	Mt
275-Ma-01	547098	5505435	Mt
276-Map-01	547098	5505435	Mt
277-Ma-01	547268	5503275	Mt
279-Ma-01	546824	5501968	Mt
281-Ma-01	547465	5506156	Mt
283-Ma-01	553561	5509818	Mv
284-Map-01	553561	5509818	Mv
285-Ma-01	536613	5537420	To
287-Ma-01	536708	5530694	Mg
288-Map-01	536708	5530694	Mg
289-Ma-01	540020	5528644	To
291-Ma-01	541347	5530081	Mg
292-Map-01	541347	5530081	Mg
293-Ma-01	540496	5525890	Gr
294-Map-01	540496	5525890	Gr
295-Ma-01	542498	5523222	Gr
297-Ma-01	537200	5515672	Mv
298-Map-01	537200	5515672	Mv
299-Ma-01	562264	5514544	Di
300-Map-01	562264	5514544	Di
301-Ma-01	557319	5514645	Mv
302-Map-01	557319	5514645	Mv
303-Ma-01	558128	5512330	Mv
304-Map-01	558128	5512330	Mv
305-Ma-01	553036	5513376	Di
306-Map-01	553036	5513376	Di
307-Ma-01	557797	5515516	Mv
308-Map-01	557797	5515516	Mv
310-Map-01	555802	5517117	Mv
311-Ma-01	561967	5518860	Di
313-Ma-01	561712	5520240	Mv
315-Ma-01	560485	5520218	Gr
317-Ma-01	569133	5523209	Mv
318-Map-01	569133	5523209	Mv
319-Ma-01	566639	5518526	Mv
320-Map-01	566639	5518526	Mv
321-Ma-01	566442	5517156	Mv
323-Ma-01	566915	5516813	Mv

Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing	

325-Ma-01	567860	5517455	Mv
327-Ma-01	568818	5517607	Mv
328-Map-01	568818	5517607	Mv
335-Ma-01	569536	5519012	Mv
336-Map-01	569536	5519012	Mv
337-Ma-01	562919	5520576	Mv
338-Map-01	562919	5520576	Mv
339-Ma-01	562792	5519783	Di
341-Ma-01	562696	5519395	Di
349-Ma-01	564988	5519864	Mv
350-Map-01	564988	5519864	Mv
351-Ma-01	567115	5522100	Mv
352-Map-01	567115	5522100	Mv
353-Ma-01	566807	5522962	Mv
354-Map-01	566807	5522962	Mv
379-Ma-01	536825	5519411	Mv
381-Ma-01	536579	5521063	To
382-Map-01	536579	5521063	To
383-Ma-01	536556	5523615	Gr
385-Ma-01	537118	5524972	To
386-Map-01	537118	5524972	To
387-Ma-01	536598	5528071	Mg
389-Ma-01	537429	5537491	To
390-Map-01	537429	5537491	To
391-Ma-01	548084	5533412	Mv
392-Map-01	548084	5533412	Mv
393-Ma-01	548884	5533587	Mv
394-Map-01	548884	5533587	Mv
395-Ma-01	549136	5533583	Mv
396-Map-01	549136	5533583	Mv
397-Ma-01	562864	5535347	To
399-Ma-01	561911	5533029	Mg
400-Map-01	561911	5533029	Mg
401-Ma-01	561728	5496599	Mg
402-Map-01	561728	5496599	Mg
403-Ma-01	547646	5509144	Mv
405-Ma-01	547540	5508167	Mv
407-Ma-01	547705	5507390	Mv
409-Ma-01	561893	5531660	Mg
410-Map-01	561893	5531660	Mg
417-Ma-01	557227	5483999	Mt
418-Map-01	557227	5483999	Mt
419-Ma-01	565362	5486095	Mt
420-Map-01	565362	5486095	Mt

APPENDIX 1: Sample Site Locations (Continued)

Modern Alluvium (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
427-Ma-01	560413	5494855	Mt	545-Ma-01	568147	5533150	Mg
428-Map-01	560413	5494855	Mt	546-Map-01	568147	5533150	Mg
435-Ma-01	548122	5500727	Mt	559-Ma-01	561068	5529657	Gr
437-Ma-01	547117	5499433	Mt	560-Map-01	561068	5529657	Gr
438-Map-01	547117	5499433	Mt	561-Ma-01	551754	5529258	Gr
439-Ma-01	546315	5498861	Mt	563-Ma-01	552446	5528138	Gr
440-Map-01	546315	5498861	Mt	564-Map-01	552446	5528138	Gr
441-Ma-01	544919	5498807	Mt	565-Ma-01	554154	5529609	Gr
443-Ma-01	543371	5499589	Mt	566-Map-01	554154	5529609	Gr
444-Map-01	543371	5499589	Mt	573-Ma-01	557266	5536558	Mv
445-Ma-01	542669	5500636	Di	575-Ma-01	557004	5534935	Di
446-Map-01	542669	5500636	Di	576-Map-01	557004	5534935	Di
459-Ma-01	566242	5526514	Mv	589-Ma-01	555774	5517116	Mv
461-Ma-01	567001	5526401	Mv	590-Map-01	555774	5517116	Mv
462-Map-01	567001	5526401	Mv	591-Ma-01	558410	5520256	Gr
463-Ma-01	567360	5526489	Mv	593-Ma-01	558453	5520142	Gr
464-Map-01	567360	5526489	Mv	595-Ma-01	560787	5520419	Gr
465-Ma-01	566934	5528457	Mv	597-Ma-01	560765	5523345	Gr
466-Map-01	566934	5528457	Mv	598-Map-01	560765	5523345	Gr
467-Ma-01	568493	5529119	Mv	605-Ma-01	553854	5514504	Mv
468-Map-01	568493	5529119	Mv	607-Ma-01	553067	5513444	Di
469-Ma-01	570208	5526278	Gr	608-Map-01	553067	5513444	Di
470-Map-01	570208	5526278	Gr	609-Ma-01	547841	5512501	Di
471-Ma-01	516824	5532845	Gr	611-Ma-01	543881	5511002	Di
472-Map-01	516824	5532845	Gr	625-Ma-01	538028	5518493	Mv
473-Ma-01	518715	5534410	Gr	627-Ma-01	548504	5536655	Gr
475-Ma-01	519608	5535305	Gr	628-Map-01	548504	5536655	Gr
476-Map-01	519608	5535305	Gr	641-Ma-01	558708	5516001	Mv
477-Ma-01	523095	5534733	Gr	642-Map-01	558708	5516001	Mv
478-Map-01	523095	5534733	Gr	649-Ma-01	561721	5536347	To
479-Ma-01	520832	5532535	Gr	651-Ma-01	560002	5536206	Gr
480-Map-01	520832	5532535	Gr	652-Map-01	560002	5536206	Gr
481-Ma-01	555726	5486501	Mt	653-Ma-01	561921	5535718	To
482-Map-01	555726	5486501	Mt	655-Ma-01	569281	5537577	To
489-Ma-01	552876	5485345	Mt	656-Map-01	569281	5537577	To
490-Map-01	552876	5485345	Mt	657-Ma-01	569095	5536755	To
491-Ma-01	552094	5482450	Mt	658-Map-01	569095	5536755	To
492-Map-01	552094	5482450	Mt	659-Ma-01	568979	5535947	To
506-Ma-01	550768	5502226	Mt	660-Map-01	568979	5535947	To
509-Ma-01	566192	5508954	Mt	661-Ma-01	536830	5489781	Mt
510-Map-01	566192	5508954	Mt	662-Map-01	536830	5489781	Mt
523-Ma-01	560067	5510321	Mt	663-Ma-01	540062	5491454	Mt
531-Ma-01	560668	5511547	Mv	664-Map-01	540062	5491454	Mt
532-Map-01	560668	5511547	Mv	665-Ma-01	546772	5491802	Mt

APPENDIX 1: Sample Site Locations (Continued)

Modern Alluvium (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
680-Ma-01	534717	5536317	To	1124-Ma-01	568240	5475587	Mt
681-Map-01	534717	5536317	To	1125-Map-01	568240	5475587	Mt
688-Ma-01	538686	5533337	To	1132-Ma-01	569985	5471981	Mt
689-Map-01	538686	5533337	To	1133-Map-01	569985	5471981	Mt
732-Ma-01	555908	5536813	To	1140-Ma-01	569580	5470576	Mt
733-Map-01	555908	5536813	To	1142-Ma-01	512036	5524571	To
734-Ma-01	552915	5535918	To	1143-Map-01	512036	5524571	To
735-Map-01	552915	5535918	To	1144-Ma-01	511635	5524543	To
736-Ma-01	552003	5533792	Di	1145-Map-01	511635	5524543	To
737-Map-01	552003	5533792	Di	1152-Ma-01	514091	5525593	To
738-Ma-01	551845	5532647	Di	1153-Map-01	514091	5525593	To
739-Map-01	551845	5532647	Di	1160-Ma-01	519304	5527642	To
1004-Ma-01	500954	5526341	Gr	1161-Map-01	519304	5527642	To
1005-Map-01	500954	5526341	Gr	1162-Ma-01	510216	5536546	Gr
1018-Ma-01	545933	5472647	Mt	1163-Map-01	510216	5536546	Gr
1020-Ma-01	548200	5471934	Gm	1172-Ma-01	513357	5531102	Gr
1028-Ma-01	541934	5470669	Gm	1180-Ma-01	514838	5529972	Gr
1030-Ma-01	501747	5526781	Gr	1315-Ma-01	501739	5534251	Gr
1038-Ma-01	538366	5470614	Gr	1316-Ma-01	503885	5530559	Gr
1046-Ma-01	538766	5474397	Gr	1317-Ma-01	508138	5531166	Gr
1047-Map-01	538766	5474397	Gr	1318-Map-01	508138	5531166	Gr
1048-Ma-01	536523	5471696	Gr	1319-Ma-01	523533	5524344	Mv
1049-Map-01	536523	5471696	Gr	1320-Ma-01	531794	5529443	Mg
1056-Ma-01	542100	5470121	Gr	1321-Map-01	531794	5529443	Mg
1058-Ma-01	537885	5478534	Mt	1322-Ma-01	541572	5533818	To
1059-Map-01	537885	5478534	Mt	1323-Ma-01	546190	5534808	To
1066-Ma-01	561421	5475024	Mt	1324-Map-01	546190	5534808	To
1068-Ma-01	560845	5475250	Mt	1325-Ma-01	564603	5525479	Gr
1070-Ma-01	560191	5479647	Mt	1326-Ma-01	557800	5525000	Gr
1072-Ma-01	538764	5477824	Mt	1327-Ma-01	553710	5522334	Gr
1074-Ma-01	541469	5478644	Mt	1328-Map-01	553710	5522334	Gr
1076-Ma-01	541322	5474619	Gr	1329-Ma-01	542276	5518266	To
1084-Ma-01	562816	5474220	Mt	1330-Ma-01	550968	5492915	Mt
1086-Ma-01	563151	5472966	Mt	1331-Map-01	550968	5492915	Mt
1088-Ma-01	568049	5469902	Mt	1332-Ma-01	547908	5489346	Mt
1096-Ma-01	541017	5475832	Gr	1333-Ma-01	549871	5485978	Mt
1098-Ma-01	544048	5481843	Mt	1334-Map-01	549871	5485978	Mt
1099-Map-01	544048	5481843	Mt	1335-Ma-01	543319	5485813	Mt
1106-Ma-01	545230	5480748	Mt	1336-Map-01	543319	5485813	Mt
1107-Map-01	545230	5480748	Mt	1337-Ma-01	540215	5481616	Mt
1110-Ma-01	544017	5479126	Mt	1339-Ma-01	545954	5477791	Mt
1114-Ma-01	550108	5471534	Gm	1340-Ma-01	547982	5482940	Mt
1116-Ma-01	571300	5477471	Mt	1341-Map-01	547982	5482940	Mt
1117-Map-01	571300	5477471	Mt	1342-Ma-01	554017	5481911	Mt

APPENDIX 1: Sample Site Locations (Continued)

Modern Alluvium (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
1343-Ma-01	557254	5478166	Mt	1358-Map-01	555758	5475166	Mt
1344-Map-01	557254	5478166	Mt	1361-Ma-01	554526	5470725	Mt
1345-Ma-01	564963	5480292	Mt	1362-Ma-01	572000	5474000	Mt
1346-Map-01	564963	5480292	Mt	1363-Map-01	572000	5474000	Mt
1347-Ma-01	571589	5497744	Mt	2000-Ma-01	550134	5481794	Mt
1348-Map-01	571589	5497744	Mt	2001-Map-01	550134	5481794	Mt
1349-Ma-01	568861	5484699	Mt	2008-Ma-01	529515	5530434	To
1350-Map-01	568861	5484699	Mt	2010-Ma-01	528646	5530045	To
1351-Ma-01	566484	5477324	Mt	2011-Map-01	528646	5530045	To
1352-Map-01	566484	5477324	Mt	2012-Ma-01	528134	5531991	To
1353-Ma-01	545639	5491169	Mt	2014-Ma-01	527841	5531687	To
1354-Map-01	545639	5491169	Mt	2015-Map-01	527841	5531687	To
1355-Ma-01	553865	5490179	Mt	2016-Ma-01	525051	5531133	To
1356-Ma-01	556820	5481013	Mt	2017-Map-01	525051	5531133	To
1357-Ma-01	555758	5475166	Mt				

Modern Alluvium Orientation Surveys

Golden Tiger				Pic River			
690-Ma-01	585837	5515620	Mv	1395-Ma-01	554815	5494471	Mt
691-Map-01	585837	5515620	Mv	1396-Map-01	554815	5494471	Mt
706-Ma-01	585714	5514243	Mv	1397-Ma-01	555008	5494372	Mt
707-Map-01	585714	5514243	Mv	1398-Map-01	555008	5494372	Mt
				1399-Ma-01	555160	5494154	Mt

Till

6-Tm-01	559811	5484202	Mt	138-Tp-01	556016	5489430	Mt
7-Tp-01	559811	5484202	Mt	149-Tm-01	543725	5506491	Di
19-Tm-01	560921	5488814	Mt	150-Tp-01	543725	5506491	Di
20-Tp-01	560921	5488814	Mt	163-Tm-01	538054	5498105	Mt
27-Tm-01	560208	5488145	Mt	164-Tp-01	538054	5498105	Mt
28-Tp-01	560208	5488145	Mt	169-Tm-01	539730	5503144	Di
33-Tm-01	561929	5491783	Mt	170-Tp-01	539730	5503144	Di
34-Tp-01	561929	5491783	Mt	175-Tm-01	544314	5499428	Mt
43-Tm-01	558537	5494470	Mt	176-Tp-01	544314	5499428	Mt
44-Tp-01	558537	5494470	Mt	187-Tm-01	537932	5487405	Mt
63-Tm-01	568610	5495777	Mt	188-Tp-01	537932	5487405	Mt
64-Tp-01	568610	5495777	Mt	193-Tm-01	539627	5485334	Mt
71-Tm-01	562839	5501435	Mt	194-Tp-01	539627	5485334	Mt
79-Tm-01	559733	5498182	Mt	199-Tm-01	541824	5483635	Mt
80-Tp-01	559733	5498182	Mt	200-Tp-01	541824	5483635	Mt
93-Tm-01	554795	5504275	Mt	213-Tm-01	544144	5489543	Mt
131-Tm-01	541394	5501774	Di	214-Tp-01	544144	5489543	Mt
137-Tm-01	556016	5489430	Mt	219-Tm-01	571307	5469690	Mt

APPENDIX 1: Sample Site Locations (Continued)

Till (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
220-Tp-01	571307	5469690	Mt	544-Tp-01	570542	5532637	Mv
231-Tm-01	564077	5471808	Mt	551-Tm-01	563096	5531932	Mg
232-Tp-01	564077	5471808	Mt	552-Tp-01	563096	5531932	Mg
237-Tm-01	547178	5474670	Mt	557-Tm-01	561414	5529862	Gr
238-Tp-01	547178	5474670	Mt	558-Tp-01	561414	5529862	Gr
245-Tm-01	551489	5476900	Mt	570-Tm-01	559325	5536958	Gr
246-Tp-01	551489	5476900	Mt	572-Tp-01	559325	5536958	Gr
253-Tm-01	552980	5472020	Mt	580-Tm-01	557031	5534933	Di
254-Tp-01	552980	5472020	Mt	582-Tp-01	557031	5534933	Di
265-Tm-01	560177	5506117	Mt	586-Tm-01	554660	5532552	Di
266-Tp-01	560177	5506117	Mt	588-Tp-01	554660	5532552	Di
333-Tm-01	569475	5518772	Mv	603-Tm-01	537242	5524732	To
334-Tp-01	569475	5518772	Mv	604-Tp-01	537242	5524732	To
347-Tm-01	563998	5519844	Mv	617-Tm-01	538912	5513093	Di
348-Tp-01	563998	5519844	Mv	618-Tp-01	538912	5513093	Di
359-Tm-01	566153	5521729	Mv	623-Tm-01	537237	5516400	Mv
360-Tp-01	566153	5521729	Mv	624-Tp-01	537237	5516400	Mv
365-Tm-01	570792	5515609	Mv	633-Tm-01	548366	5536706	Gr
366-Tp-01	570792	5515609	Mv	634-Tp-01	548366	5536706	Gr
371-Tm-01	557548	5514673	Mv	639-Tm-01	562530	5517488	Di
372-Tp-01	557548	5514673	Mv	640-Tp-01	562530	5517488	Di
377-Tm-01	561471	5515140	Di	647-Tm-01	559282	5516252	Di
378-Tp-01	561471	5515140	Di	648-Tp-01	559282	5516252	Di
415-Tm-01	567592	5532784	Mg	671-Tm-01	539722	5492737	Mt
416-Tp-01	567592	5532784	Mg	672-Tp-01	539722	5492737	Mt
425-Tm-01	566512	5486056	Mt	677-Tm-01	570826	5527103	Gr
426-Tp-01	566512	5486056	Mt	678-Tp-01	570826	5527103	Gr
433-Tm-01	550012	5497000	Mt	686-Tm-01	534809	5536042	To
434-Tp-01	550012	5497000	Mt	687-Tp-01	534809	5536042	To
451-Tm-01	543137	5494205	Mt	723-Tm-01	539991	5533337	To
452-Tp-01	543137	5494205	Mt	725-Tp-01	539991	5533337	To
457-Tm-01	547198	5495505	Mt	729-Tm-01	542001	5534925	To
458-Tp-01	547198	5495505	Mt	731-Tp-01	542001	5534925	To
487-Tm-01	555768	5485578	Mt	1009-Tp-01	501790	5526230	Gr
488-Tp-01	555768	5485578	Mt	1011-Tm-01	501790	5526230	Gr
497-Tm-01	549641	5481575	Mt	1016-Tm-01	543579	5472302	Gm
498-Tp-01	549641	5481575	Mt	1017-Tp-01	543579	5472302	Gm
504-Tm-01	550192	0.550493	Mv	1025-Tm-01	547792	5471086	Gm
514-Tm-01	568461	5509547	Mt	1027-Tp-01	547792	5471086	Gm
520-Tm-01	565861	5509196	Mt	1036-Tm-01	506747	5525472	Gr
528-Tm-01	559999	5510706	Mt	1044-Tm-01	539183	5474443	Gr
537-Tm-01	555345	5494188	Mt	1054-Tm-01	537485	5469495	Gr
538-Tp-01	555345	5494188	Mt	1064-Tm-01	539308	5478568	Mt
543-Tm-01	570542	5532637	Mv	1065-Tp-01	539308	5478568	Mt

APPENDIX 1: Sample Site Locations (Continued)

Till (Continued)

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
1082-Tm-01	562073	5474522	Mt	1151-Tp-01	512361	5525826	Gr
1094-Tm-01	541535	5475633	Gr	1158-Tm-01	516318	5526571	To
1104-Tm-01	545075	5481107	Mt	1159-Tp-01	516318	5526571	To
1105-Tp-01	545075	5481107	Mt	1170-Tm-01	511063	5534919	Gr
1122-Tm-01	571033	5476898	Mt	1171-Tp-01	511063	5534919	Gr
1123-Tp-01	571033	5476898	Mt	1178-Tm-01	513228	5531846	Gr
1130-Tm-01	569649	5474524	Mt	1179-Tp-01	513228	5531846	Gr
1131-Tp-01	569649	5474524	Mt	1186-Tm-01	515560	5536699	Gr
1138-Tm-01	569491	5472289	Mt	1187-Tp-01	515560	5536699	Gr
1139-Tp-01	569491	5472289	Mt	2006-Tm-01	551529	5482343	Mt
1150-Tm-01	512361	5525826	Gr	2007-Tp-01	551529	5482343	Mt

Till Orientation Surveys

Golden Tiger				Pic River			
696-Tm-01	585999	5514356	Mv	1365-Tm-01	555268	5494714	Mt
697-Tp-01	585999	5514356	Mv	1367-Tm-01	555282	5494493	Mt
702-Tm-01	585922	5514361	Mv	1370-Tm-01	555273	5494366	Mt
703-Tp-01	585922	5514361	Mv	1373-Tm-01	555418	5494421	Mt
712-Tm-01	585560	5513835	Mv	1377-Tm-01	555358	5494678	Mt
713-Tp-01	585560	5513835	Mv	1380-Tm-01	555404	5494587	Mt
717-Tm-01	585669	5513963	Mv	1383-Tm-01	555360	5494400	Mt
719-Tp-01	585669	5513963	Mv	1387-Tm-01	555311	5494637	Mt
				1390-Tm-01	555337	5494483	Mt

Eskers

1001-ESP-01	500238	5526728	Gr	2038-ES-01	569550	5517350	Mv
1165-ESP-01	510669	5535527	Gr	2039-ESP-01	569550	5517350	Mv
2020-ES-01	500252	5526401	Gr	2040-ES-01	510274	5536246	Gr
2021-ESP-01	500252	5526401	Gr	2041-ESP-01	510274	5536246	Gr
2023-ESP-01	560300	5475500	Mt	2044-ES-01	536503	5537587	To
2026-ES-01	561600	5493200	Mt	2045-ESP-01	536503	5537587	To
2027-ESP-01	561600	5493200	Mt	2050-ES-01	552685	5528022	Gr
2030-ES-01	562200	5494900	Mt	2051-ESP-01	552685	5528022	Gr
2031-ESP-01	562200	5494900	Mt	2052-ES-01	546252	5523769	To
2036-ES-01	559300	5513000	Mv	2053-ESP-01	546252	5523769	To
2037-ESP-01	559300	5513000	Mv	2056-ES-01	566779	5519369	Mv
				2057-ESP-01	566779	5519369	Mv

Esker Orientation Surveys

Golden Tiger			
705-ESP-01	585672	5514322	Mv

APPENDIX 1: Sample Site Locations (Continued)

Glaciolacustrine

Sample Number/Material	U.T.M.'s		Associated Bedrock	Sample Number/Material	U.T.M.'s		Associated Bedrock
	Easting	Northing			Easting	Northing	
2032-GL-01	554900	5502800	Mt	2043-GLP-01	553801	5525643	Gr
2033-GLP-01	554900	5502800	Mt	2054-GL-01	550350	5515979	Gr
2042-GL-01	553801	5525643	Gr	2055-GLP-01	550350	5515979	Gr

Glaciolacustrine Orientation Survey

Pic River							
1364-GL-01	555203	5494778	Mt	1393-GL-01	555091	5494396	Mt
1376-GL-01	555376	5494722	Mt	1394-GLP-01	555091	5494396	Mt
1386-GL-01	555341	5494722	Mt				

Glaciofluvial

1109-GFP-01	545420	5480511	Mt	2022-GF-01	560300	5475500	Mt
2018-GF-01	571500	5469700	Mt	2024-GF-01	549100	5470600	Gm
2019-GFP-01	571500	5469700	Mt	2025-GFP-01	549100	5470600	Gm

Recessional Moraine

1002-MRP-01	500585	5526535	Gr	2035-MRP-01	563850	5509600	Mt
1113-MRP-01	543076	5478960	Mt	2046-MR-01	537595	5528713	To
2028-MR-01	558500	5493800	Mt	2047-MRP-01	537595	5528713	To
2029-MRP-01	558500	5493800	Mt	2048-MR-01	559985	5529271	Gr
2034-MR-01	563850	5509600	Mt	2049-MRP-01	559985	5529271	Gr

APPENDIX 2: Summary Counts of Picked and Estimated Number of Grains

Kimberlite Indicator Minerals

Summary List of Abbreviations

CR:	Chromite
DC:	Cr-diopside
Est:	Estimate
ES:	Esker
FO:	Forsteritic olivine
GF:	Glaciofluvial
GL:	Glaciolacustrine
GO:	Eclogitic garnet
GP:	Cr-pyrope garnet
HMC:	Heavy mineral concentrate
IM:	Mg-Ilmenite
KIMs:	Kimberlite indicator minerals
MA:	Modern alluvium
MR:	Recessional moraine
Pic:	Picked
TM:	Till

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals

Modern Alluvium																										
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)																					
	1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		0.25-0.5 mm Low-Cr diopside				1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm									
	Pic.	Pic.	Est.	Pic.	Est.	Pic.	Pic.	FO*	GP	GO	DC	IM	CR	Pic.	Pic.	FO*	GP	GO	DC	IM	CR	Est.	Pic.	FO*		
1-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8-Ma-01	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
14-Ma-01	No Sample	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
21-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
35-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
37-Ma-01	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
45-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0		
47-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
49-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
51-Ma-01	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0		
53-Ma-01	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
55-Ma-01	No Sample	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
57-Ma-01	No Sample	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
65-Ma-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
73-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0		
81-Ma-01	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		
83-Ma-01	No Sample	No Sample	0	0	0	No Sample				No Sample				No Sample				No Sample				0	0	0	0	0
85-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
87-Ma-01	0	0	0	3	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	7	20	0		
95-Ma-01	No Sample	No Sample	0	0	0	No Sample				No Sample				No Sample				No Sample				0	0	0	0	0
97-Ma-01	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	19	17	7	60	0	1	0	0		
99-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
101-Ma-01	No Sample	0	0	0	0	No Sample				No Sample				No Sample				No Sample				0	0	0	0	0
103-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
105-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
107-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	1	0	0	0	0		

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Sample Number		Modern Alluvium (Continued)																KIM Count (*species not rigorously picked; excluded from total)															
		Selected Pseudo KIMs								1.0 to 2.0 mm								0.5 to 1.0 mm								0.25 to 0.5 mm							
		1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		0.25-0.5 mm Low-Cr diopside		GP Pic.		GO Pic.		DC Pic.		IM Pic.		CR Pic.		FO* Pic.		GP Pic.		GO Pic.		DC Pic.		IM Pic.		CR Pic.		FO* Pic.			
Pic.		Est.		Pic.		Est.		Pic.		Est.		Pic.		Est.		Pic.		Est.		Pic.		Est.		Pic.		Est.		Pic.		Est.			
109-Ma-01		0		0		0		1		0		0		0		0		0		0		4		8		0		0		0			
111-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
113-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
115-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
117-Ma-01		No Sample		0		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
119-Ma-01		No Sample		0		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
121-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
123-Ma-01		0		0		0		2		0		0		0		0		0		1		0		0		0		0		0			
125-Ma-01		0		0		0		1		0		0		0		0		0		0		1		0		0		0		0			
139-Ma-01		No Sample		0		0		1		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
141-Ma-01		0		0		0		2		0		0		0		0		0		0		1		0		0		0		0			
143-Ma-01		0		0		0		1		0		0		0		0		0		0		0		0		2		0		0			
151-Ma-01		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
153-Ma-01		0		0		0		0		0		0		0		0		0		1		0		0		0		0		0			
155-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
157-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
177-Ma-01		No Sample		No Sample		0		0		0		No Sample		No Sample		No Sample		No Sample		0		0		0		0		0		0			
179-Ma-01		0		0		0		3		0		0		0		0		0		0		0		0		0		1		0			
181-Ma-01		0		0		0		1		0		0		0		0		0		0		0		0		0		0		0			
201-Ma-01		0		0		0		3		0		0		0		0		0		0		0		0		3		0		0			
203-Ma-01		0		0		0		3		0		0		0		0		0		0		0		0		0		1		0			
205-Ma-01		0		0		0		0		0		0		0		0		0		1		0		0		0		0		0			
207-Ma-01		0		0		0		0		0		0		0		0		0		1		0		0		0		0		0			
219-Ma-01		0		0		0		1		0		0		0		0		0		1		0		0		0		0		0			
221-Ma-01		0		1		0		4		0		0		0		0		0		0		0		0		20		0		0			
223-Ma-01		0		0		0		1		0		0		0		0		0		0		0		0		0		0		0			
225-Ma-01		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
239-Ma-01		5		33		0		60		100		0		0		0		1		0		0		1		0		5		8			

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)											
	1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm			
	Pic.	Est.	Pic.	Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.
247-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
255-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
257-Ma-01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
259-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
267-Ma-01	No Sample	No Sample		0					No Sample							No Sample
269-Ma-01	No Sample	No Sample		0					No Sample							No Sample
271-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
273-Ma-01	No Sample	No Sample		0					No Sample							No Sample
275-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
277-Ma-01	No Sample			0					No Sample							No Sample
279-Ma-01	No Sample	0		0					No Sample							No Sample
281-Ma-01	No Sample	0		0	2	0			No Sample							No Sample
283-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
285-Ma-01	No Sample	No Sample		0					No Sample							No Sample
287-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
289-Ma-01	No Sample	No Sample		0					No Sample							No Sample
291-Ma-01	0	0		0	2	0	0	0	0	0	0	0	0	0	0	0
293-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
295-Ma-01	No Sample	0		0	0	0			No Sample							No Sample
297-Ma-01	0	0		0	3	0	0	0	0	0	0	0	0	0	0	0
299-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
301-Ma-01	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0
303-Ma-01	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0
305-Ma-01	No Sample	No Sample		0					No Sample							No Sample
307-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
311-Ma-01	No Sample	0		0					No Sample							No Sample
313-Ma-01	No Sample	No Sample		0					No Sample							No Sample
315-Ma-01	No Sample	0		0	0	0			No Sample							No Sample

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																				
Sample Number	Selected Pseudo KIMs										KIM Count (*species not rigorously picked; excluded from total)									
	1.0-2.0 mm		0.5-1.0 mm		0.25-0.5 mm		1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm					
	Low-Cr diopside Pic.	Low-Cr diopside Pic.	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	Est.	
317-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
319-Ma-01	0		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
321-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
323-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
325-Ma-01	No Sample		0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
327-Ma-01	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
335-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
337-Ma-01	0		0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
339-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
341-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
349-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
351-Ma-01	0		0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	0	
353-Ma-01	0		0	0	5	0	0	0	1	1	0	0	0	0	0	0	0	2	0	
379-Ma-01	No Sample		0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
381-Ma-01	0		0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
383-Ma-01	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
385-Ma-01	0		0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
387-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
389-Ma-01	0		0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
391-Ma-01	0		0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
393-Ma-01	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
395-Ma-01	0		0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
397-Ma-01	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
399-Ma-01	0		0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
401-Ma-01	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
403-Ma-01	No Sample	0	0	0	4	0	No Sample				No Sample				0	0	0	0	0	0
405-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
407-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																												
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)																							
	1.0-2.0 mm		0.5-1.0 mm		0.25-0.5 mm		1.0 to 2.0 mm								0.5 to 1.0 mm								0.25 to 0.5 mm					
	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	Est.	FO* Pic.	Est.		
409-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
417-Ma-01	0	0		0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
419-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
427-Ma-01	0	0		0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
435-Ma-01	No Sample	No Sample		0	0	0		No Sample				No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0
437-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
439-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
441-Ma-01	No Sample	No Sample		0	0	0		No Sample				No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0
443-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	
445-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	2	0	2	0	1	
459-Ma-01	No Sample	No Sample		0	0	0		No Sample				No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0
461-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	
463-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
465-Ma-01	No Sample			0	0	1	0	No Sample				No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0
467-Ma-01	0	0		0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
469-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	1	0	0	
471-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
473-Ma-01	0	0		0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
475-Ma-01	0	0		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
477-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	
479-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	0	0	0	0	
481-Ma-01	0	0		0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
487-Ma-01	0	0		0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
489-Ma-01	0	0		0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
491-Ma-01	0	0		0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
506-Ma-01	No Sample	No Sample		0	0	0		No Sample				No Sample				0	0	0	0	0	0	0	0	0	0	0	0	0
509-Ma-01	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
523-Ma-01	0	0		0	0	2	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	2	0	1	0	0	

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																												
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)																							
	1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		1.0 to 2.0 mm								0.5 to 1.0 mm								0.25 to 0.5 mm							
	Pic.	Est.	Pic.	Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	Est.	Pic.	Est.	FO* Pic.			
531-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
545-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
559-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
561-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
563-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
565-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
573-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
575-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
589-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
591-Ma-01	No Sample	No Sample	0	0	No Sample								No Sample								No Sample							
593-Ma-01	No Sample	No Sample	0	0	No Sample								No Sample								No Sample							
595-Ma-01	No Sample	0	0	2	No Sample								No Sample								No Sample							
597-Ma-01	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
605-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
607-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
609-Ma-01	No Sample	0	0	2	No Sample								No Sample								No Sample							
611-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
625-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
627-Ma-01	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
641-Ma-01	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
649-Ma-01	No Sample	No Sample	0	0	No Sample								No Sample								No Sample							
651-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
653-Ma-01	No Sample	0	0	0	No Sample								No Sample								No Sample							
655-Ma-01	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
657-Ma-01	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
659-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
661-Ma-01	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
663-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																										
Sample Number	Selected Pseudo KIMs					KIM Count (*species not rigorously picked; excluded from total)																				
	1.0-2.0 mm		0.5-1.0 mm		0.25-0.5 mm Low-Cr diopside	1.0 to 2.0 mm					0.5 to 1.0 mm					0.25 to 0.5 mm										
	Low-Cr diopside Pic.	Est.	Low-Cr diopside Pic.	Est.		GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	Est.	Pic.	FO* Pic.	Est.
665-Ma-01	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
680-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
688-Ma-01	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
732-Ma-01	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
734-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
736-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
738-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1004-Ma-01	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1018-Ma-01	1	1	0	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	1	0	0	0
1020-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1028-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1030-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0
1033-Ma-01	0	4	0	19	19	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	6	0	0	0
1046-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1048-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	0
1056-Ma-01	0	13	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0
1058-Ma-01	0	0	0	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1066-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0
1068-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1070-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
1072-Ma-01	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0
1074-Ma-01	6	10	25	15	30	15	30	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	0	3	0	0
1076-Ma-01	0	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0
1084-Ma-01	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1086-Ma-01	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1088-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1096-Ma-01	No Sample	0	0	3	0	No Sample					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1098-Ma-01	0	0	0	10	0	10	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	1	0	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																				
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)															
	1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		0.25-0.5 mm Low-Cr diopside				1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm			
	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.
1106-Ma-01	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1110-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1114-Ma-01	No Sample	0	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0
1116-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1124-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1132-Ma-01	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1140-Ma-01	No Sample	0	0	0	3	0	No Sample				0	0	0	0	0	0	0	0	0	0
1142-Ma-01	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1144-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1152-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1160-Ma-01	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1162-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1172-Ma-01	No Sample	0	0	0	1	0	No Sample				0	0	0	0	0	0	0	0	0	0
1180-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1315-Ma-01	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1316-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1317-Ma-01	No Sample	0	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0
1319-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1320-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1322-Ma-01	No Sample	0	0	0	0	0	No Sample				0	0	0	0	0	0	0	0	0	0
1323-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1325-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				0	0	0	0	0	0
1326-Ma-01	No Sample	0	0	0	1	0	No Sample				0	0	0	0	0	0	0	0	0	0
1327-Ma-01	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1329-Ma-01	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1330-Ma-01	0	3	0	0	5	0	0	0	0	0	0	0	105	4	0	2	3	2	25	100
1332-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1333-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	4	1	14	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)																						
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)																	
	1.0-2.0 mm		0.5-1.0 mm		0.25-0.5 mm				1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm					
	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	diopside		diopside		diopside		diopside		diopside		diopside		diopside					
1335-Ma-01	0	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1337-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1339-Ma-01	No Sample		0	0	6	0	No Sample				0	0	0	0	0	0	0	0	0			
1340-Ma-01	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1342-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1343-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1345-Ma-01	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1347-Ma-01	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1349-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1351-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1353-Ma-01	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1355-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				No Sample				0	0	0	0
1356-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				No Sample				0	0	0	0
1357-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1361-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				No Sample				0	0	0	0
1362-Ma-01	0	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2000-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2008-Ma-01	No Sample	No Sample	0	0	0	0	No Sample				No Sample				No Sample				0	0	0	0
2010-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2012-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2014-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2016-Ma-01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Modern Alluvium Orientation Surveys

Golden Tiger																		
690-Ma-01	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
706-Ma-01	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Modern Alluvium (Continued)													
Sample Number	Selected Pseudo KIMs				KIM Count (*species not rigorously picked; excluded from total)								
	1.0-2.0 mm		0.25-0.5 mm		1.0 to 2.0 mm				0.5 to 1.0 mm				
	Low-Cr diopside		Low-Cr diopside		GP				GP				
	Pic.	Est.	Pic.	Est.	Pic.	Pic.	Pic.	Pic.	Pic.	Pic.	Pic.	Pic.	FO*

Modern Alluvium Orientation Surveys (Continued)

Ric River													
1395-Ma-01	0	0	0	1	0	0	0	0	0	0	0	0	0
1397-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0
1399-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0

Till													
6-Tm-01	0	0	0	1	0	0	0	0	0	0	0	0	0
19-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
33-Tm-01	0	0	0	2	0	0	0	0	0	0	0	0	0
43-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
63-Tm-01	0	0	0	2	0	0	0	0	0	0	0	0	0
71-Tm-01	0	0	0	1	0	0	0	0	0	0	0	0	0
79-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
93-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
131-Tm-01	0	0	0	0	0	0	0	0	0	0	0	2	0
137-Tm-01	0	0	0	2	0	0	0	0	0	0	0	0	0
149-Tm-01	0	0	0	0	0	0	0	0	0	0	0	1	0
163-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
169-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
175-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
187-Tm-01	0	0	0	0	0	0	0	0	0	0	0	1	0
193-Tm-01	0	0	0	1	0	0	0	0	0	0	0	0	0
199-Tm-01	0	0	0	3	0	0	0	0	0	0	0	0	0
213-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
231-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0
237-Tm-01	0	18	0	40	80	0	0	0	0	0	0	9	50

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Till (Continued)		KIM Count (*species not rigorously picked; excluded from total)																													
		Selected Pseudo KIMs						1.0 to 2.0 mm						0.25 to 0.5 mm																	
		1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		0.25-0.5 mm Low-Cr diopside		GP Pic.		GO DC Pic.		IM Pic.		CR Pic.		FO* Pic.		GP Pic.		GO DC Pic.		IM Pic.		CR Pic.		FO* Pic.					
Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.				
245-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
253-Tm-01	No Sample	0	0	1	0	No Sample												0	0	0	0	0	0	1	0	0	0	0	0	0	0
265-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
333-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
347-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
359-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
365-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
371-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
377-Tm-01	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
415-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
425-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
433-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
451-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
457-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
497-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
504-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
514-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
520-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
528-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
537-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
543-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
551-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
557-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
570-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
580-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
586-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
603-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Till (Continued)																			
Sample Number	Selected Pseudo KIMs						KIM Count (*species not rigorously picked; excluded from total)												
	1.0-2.0 mm		0.5-1.0 mm		0.25-0.5 mm		1.0 to 2.0 mm					0.5 to 1.0 mm					0.25 to 0.5 mm		
	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	Low-Cr diopside Pic.	Low-Cr diopside Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	
2006-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2006-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Till Orientation Surveys															
Golden Tiger															
696-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
702-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
712-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
717-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pic River															
1365-Tm-01	No Sample	No Sample	0	0	0	No Sample					0	0	0	0	0
1367-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1370-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1373-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1377-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1380-Tm-01	No Sample	No Sample	0	0	0	No Sample					0	0	0	0	0
1383-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1387-Tm-01	No Sample	No Sample	0	0	0	No Sample					0	0	0	0	0
1390-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 16.0 g of 21.0 g HMC from Sample 1386 and 6.8 g of 23.2 g HMC were accidentally combined during heavy mineral separation. The combined portion of the HMC was prepared and logged separate as Sample 1386+1387.

Esker															
2020-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Esker (Continued)		KIM Count (*species not rigorously picked; excluded from total)																													
Sample Number	Selected Pseudo KIMs		1.0 to 2.0 mm				0.5 to 1.0 mm				0.25 to 0.5 mm																				
	1.0-2.0 mm Low-Cr diopside		0.5-1.0 mm Low-Cr diopside		0.25-0.5 mm Low-Cr diopside		GP		GO		DC		IM		CR		FO*		GP		GO		DC		IM		CR		FO*		
	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	Pic.	Est.	
2036-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2038-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2040-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2044-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2050-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2052-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2056-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Esker Orientation Survey

Golden Tiger																		
704-ES-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Glaciolacustrine

2032-GL-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2042-GL-01	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2054-GL-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Glaciolacustrine Orientation Survey

Pic River																		
1364-GL-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1376-GL-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1386-GL-01	No Sample	No Sample	0	0	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample
1393-GL-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Glaciolacustrine

2018-GF-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022-GF-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-GF-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2a: Picked and Estimated Kimberlite Indicator Minerals (Continued)

Recessional Moraine		KIM Count (*species not rigorously picked; excluded from total)															
Sample Number	Selected Pseudo KIMs		0.25 to 0.5 mm														
	1.0-2.0 mm		0.5 to 1.0 mm								0.25 to 0.5 mm						
	Low-Cr diopside Pic.	Low-Cr diopside Est.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.	IM Pic.	CR Pic.	FO* Pic.	GP Pic.	GO Pic.	DC Pic.
2028-MR-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2034-MR-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2046-MR-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2048-MR-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2: Summary Counts of Picked and Estimated Number of Grains

Metamorphosed or Magmatic Massive Sulphide Indicator Minerals

Summary List of Abbreviations

%:	Percentage
An:	Anthophyllite
Ar:	Arsenopyrite
Ch:	Chalcopyrite
Co:	Corundum
Cr:	Chromite
Cru:	Ruby corundum
EG:	Estimated number of grains
ES:	Esker
Gah:	Gahnite
Gal:	Galena
GF:	Glaciofluvial
GL:	Glaciolacustrine
Gth:	Goethite
Gr:	Granite
Ky:	Kyanite
Ldc:	Low-Cr diopside
Lo:	Loellingite
MA:	Modern alluvium
Me:	Mn-epidote
Mo:	Molybdenite
MR:	Recessional moraine
Ng:	Native Gold
Ol:	Olivine
Or:	Orthopyroxene
Pic:	Picked
Py:	Pyrite
Rr:	Red rutile
Si:	Sillimanite
Sps:	Spessartine
Sp:	Spinel
St:	Staurolite
Tm:	Till
Tou:	Tourmaline
Tr:	Trace

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals

Sample Number	U.T.M.'s		Modern Alluvium																	
	Easting	Northing	An	Ar	Ch	Co	Cr	Cru	Gah	Gal	Gth	Gr	Ky	Ldc	Lo	Me	Mo			
			%	EG	%	EG	%	EG	Pic.	%	EG	%	%	%	%	%	%	EG	%	EG
1-Ma-01	559926	5483175	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
8-Ma-01	560485	5484069	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
10-Ma-01	559828	5485250	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
12-Ma-01	559731	5485814	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
14-Ma-01	559352	5485930	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
21-Ma-01	562181	5489925	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
35-Ma-01	561548	5492854	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
37-Ma-01	556510	5494605	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
45-Ma-01	562436	5493260	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
47-Ma-01	562147	5493082	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
49-Ma-01	563865	5493110	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
51-Ma-01	564553	5496481	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
53-Ma-01	564553	5496481	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
55-Ma-01	570111	5495628	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
57-Ma-01	569973	5495685	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
65-Ma-00	563033	5501435	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
73-Ma-01	563047	5499935	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
81-Ma-01	563449	5499941	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
83-Ma-01	563167	5498019	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
85-Ma-01	557307	5500564	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
87-Ma-01	555288	5504012	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
95-Ma-01	554958	5494458	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
97-Ma-01	554116	5495054	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
99-Ma-01	551778	5497525	20	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
101-Ma-01	552058	5497531	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
103-Ma-01	552376	5496699	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
105-Ma-01	553880	5496149	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
107-Ma-01	555479	5493709	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
109-Ma-01	555479	5493709	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
111-Ma-01	555150	5490949	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
113-Ma-01	555146	5491160	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium											
	Ng		Ol		Or		Py		Rr		Si	
	Pic.	%	Pic.	%	Pic.	%	Pic.	%	EG	%	EG	%
1-Ma-01	1	0	0	0	2	2	0	0	15	0	0	0
8-Ma-01	0	0	0	0	2	2	0	0	0	0	0	0
10-Ma-01	0	0	0	0	3	3	0	0	0	0	0	0
12-Ma-01	0	0	0	0	2	2	0	0	0	0	0	0
14-Ma-01	1	0	0	0	5	5	0	0	0	0	0	0
21-Ma-01	1	0	0	0	3	3	Tr	8	0	0	0	0
35-Ma-01	1	0	0	0	2	2	0	0	0	0	0	0
37-Ma-01	0	0	0	0	5	5	0	0	0	0	Tr	0.25
45-Ma-01	0	0	0	0	Tr	0.25	10	600	0	0	0	0
47-Ma-01	0	0	0	0	Tr	0.25	Tr	5	0	0	0	0
49-Ma-01	0	0	0	0	3	3	Tr	5	0	0	0	0
51-Ma-01	1	0	0	0	Tr	0.5	Tr	2	0	0	0	0
53-Ma-01	0	0	0	0	Tr	0.5	Tr	2	0	0	Tr	0.25
55-Ma-01	1	0	0	0	2	2	Tr	2	0	0	0	0
57-Ma-01	1	0	0	0	Tr	0.25	0	0	0	0	0	0
65-Ma-00	0	0	0	0	Tr	0.25	Tr	2	0	0	Tr	0.25
73-Ma-01	0	0	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25
81-Ma-01	0	0	0	0	1	1	Tr	2	0	0	Tr	0.25
83-Ma-01	1	0	0	0	2	2	0	0	0	0	0	0
85-Ma-01	0	0	0	0	0	0	0.5	35	0	0	Tr	0.25
87-Ma-01	2	0	0	0	Tr	0.25	2	400	0	0	Tr	0.25
95-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
97-Ma-01	0	0	0	0	3	3	0	0	0	0	0	0
99-Ma-01	0	0	0	0	2	2	Tr	40	0	0	0	0
101-Ma-01	0	0	0	0	3	3	0	0	0	0	0	0
103-Ma-01	0	0	0	0	Tr	0.25	1	50	0	0	0	0
105-Ma-01	0	0	0	0	3	3	0	0	0	0	0	0
107-Ma-01	0	0	0	0	3	3	0	0	0	0	0	0
109-Ma-01	1	0	0	0	2	2	0	0	0	0	0	0
111-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
113-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample NNumber	U.T.M.'s		Modern Alluvium																	
	Easting	Northing	An %	Ar %	Ch EG %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal EG %	Gth EG %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %			
1115-Ma-01	555819	5489759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1117-Ma-01	555917	5489531	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
1119-Ma-01	556511	5489253	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
121-Ma-01	543509	5508948	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
123-Ma-01	546287	5507295	0	0	0	0	Tr 2	0	0	0	0	0	0	0	Tr 2	0	Tr 1	0		
125-Ma-01	542540	5505931	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr 0.25	0	0	0	0		
139-Ma-01	557367	5489130	0	0	0	0	0	0	0	0	0	0	0	Tr 1	0	0	0	0		
141-Ma-01	557255	5487822	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr 0.25	1	0	0	0		
143-Ma-01	557263	5487917	0	0	0	0	Tr 1	0	0	0	0	0	Tr	0.25	0	0	0	0		
151-Ma-01	543711	5504512	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
153-Ma-01	543201	5503034	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
155-Ma-01	541871	5513015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
157-Ma-01	540550	5498806	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
177-Ma-01	542448	5512956	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
179-Ma-01	549423	5506109	0	0	0	0	Tr 1	0	0	0	Tr	0.25	0	Tr 0.25	1	0	0	0		
181-Ma-01	539827	5489671	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr 0.25	0	0	0	0		
201-Ma-01	538202	5484251	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
203-Ma-01	542950	5490654	0	0	0	0	Tr 1	0	0	0	0	0	1	Tr 3	0	0	0	0		
205-Ma-01	543016	5490063	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
207-Ma-01	542866	5491516	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
221-Ma-01	567120	5469023	0	0	Tr 1	0	Tr 2	0	0	0	Tr	0.25	0	Tr 0.25	4	0	0	0		
223-Ma-01	565275	5470895	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr 0.25	1	0	0	0		
225-Ma-01	565199	5472033	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
239-Ma-01	546246	5474466	0	0	0	0	Tr 8	0	0	0	Tr	0.25	0	Tr 0.25	110	0	0	0		
247-Ma-01	551067	5474841	0	0	0	0	Tr 4	0	0	0	0	0	Tr	0.25	0	Tr 1	0	0		
255-Ma-01	557755	5474586	0	0	0	0	Tr 1	0	0	0	Tr	0.25	0	Tr 0.25	1	0	0	0		
257-Ma-01	571146	5509524	0	0	Tr 2	0	0	0	0	0	0	0	Tr	0.25	3	0	0	Tr 1		
259-Ma-01	560189	5506004	0	0	Tr 1	0	0	0	0	0	0	0	Tr	0.25	1	0	0	0		
267-Ma-01	557882	5504539	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
269-Ma-01	559313	5503437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
271-Ma-01	561271	5503221	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium																		
	Ng		OI		Or		Py		Rr		Si		Sps		Sp		St		Tou
	Pic.	%	Pic.	%	Pic.	%	Pic.	%	EG	%	EG	%	%	%	Pic.	%	%	Pic.	
115-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117-Ma-01	0	0	0	5	5	5	Tr	20	0	0	0	0	0	0	0	0	0	0	0
119-Ma-01	1	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121-Ma-01	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123-Ma-01	0	0	0	3	3	3	0	0	0	0	0	0	0	0	2	0	0	0	0
125-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0
139-Ma-01	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
141-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	Tr	0.25	Tr	0.25	0	0	0	0	0
143-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0
151-Ma-01	1	0	0	2	2	2	Tr	1	0	0	0	0	0	0	0	Tr	0.25	0	0
153-Ma-01	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155-Ma-01	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157-Ma-01	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179-Ma-01	0	0	0	0	0	0	Tr	15	0	0	0	0	0	0	1	0	0	0	0
181-Ma-01	0	0	0	Tr	0.25	Tr	15	0	0	0	0	0	0	0	0	Tr	0.25	0	0
201-Ma-01	0	0	0	0	0	0	Tr	15	0	0	0	0	0	0	1	Tr	0.25	0	0
203-Ma-01	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	Tr	0.25	0	0
205-Ma-01	0	0	0	Tr	0.25	Tr	5	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	0
207-Ma-01	0	0	0	Tr	0.25	Tr	2	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	0
221-Ma-01	0	0	0	Tr	0.25	2	200	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	0
223-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0
225-Ma-01	0	0	0	1	1	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
239-Ma-01	1	0	0	2	2	2	Tr	20	0	0	0	0	0	0	0	Tr	0.25	0	0
247-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2	Tr	0.25	0	0
255-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0
257-Ma-01	0	0	0	2	2	2	Tr	20	0	0	0	0	0	0	1	Tr	0.25	0	0
259-Ma-01	0	0	0	5	5	5	Tr	5	0	0	Tr	0.25	0	0	0	Tr	0.25	0	0
267-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
269-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
271-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium																								
	Easting	Northing	An %	Ar %	Ch		Co		Cr		Cru		Gah Pic.	Gal		Gth		Gr Pic.	Ky %	Ldc %	Lo		Me		Mo		
					EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %		EG %	EG %	EG %	EG %				EG %	EG %	EG %	EG %	EG %	EG %	EG %
273-Ma-01	563420	5503952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
275-Ma-01	547098	5505435	0	0	0	0	0	0	0	Tr	3	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
277-Ma-01	547268	5503275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
279-Ma-01	546824	5501968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281-Ma-01	547465	5506156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	1	0	0	0
283-Ma-01	553561	5509818	0	0	0	0	0	0	0	Tr	2	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
285-Ma-01	536613	5537420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
287-Ma-01	536708	5530694	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
289-Ma-01	540020	5528644	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0	0
291-Ma-01	541347	5530081	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
293-Ma-01	540496	5525890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	2	0	0	0	0
295-Ma-01	542498	5523222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
297-Ma-01	537200	5515672	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
299-Ma-01	562264	5514544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
301-Ma-01	557319	5514645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
303-Ma-01	558128	5512330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
305-Ma-01	553036	5513376	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307-Ma-01	557797	5515516	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
311-Ma-01	561967	5518860	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
313-Ma-01	561712	5520240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	3	0	0	0	0
315-Ma-01	560485	5520218	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
317-Ma-01	569133	5523209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
319-Ma-01	566639	5518526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
321-Ma-01	566442	5517156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
323-Ma-01	566915	5516813	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0
325-Ma-01	567860	5517455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	5	0	0	0	0
327-Ma-01	568818	5517607	0	0	0	0	0	0	0	Tr	5	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0	0
335-Ma-01	569536	5519012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337-Ma-01	562919	5520576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
339-Ma-01	562792	5519783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0
341-Ma-01	562696	5519395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium														Tou Pic.	
	Ng		Ol		Or %	Py		Rr		Si %	Sps		Sp			St %
	Pic.	%	Pic.	%		EG	%	EG	%		%	Pic.	%			
273-Ma-01	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
275-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0
277-Ma-01	0	0	0	1	1	Tr	2	0	0	0	0	0	0	Tr	0.25	0
279-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
281-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0	0	Tr	0.25	0
283-Ma-01	0	0	0	10	10	0	0	0	0	0	0	0	0	Tr	0.25	0
285-Ma-01	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0
287-Ma-01	0	0	0	Tr	0.25	Tr	10	0	0	0	0	0	0	0	0	0
289-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
291-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	0	Tr	0.5	0
293-Ma-01	0	0	0	Tr	0.25	Tr	10	0	0	0	0	0	0	0	0	0
295-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
297-Ma-01	1	0	0	Tr	0.25	Tr	2	0	0	0	0	0	0	0	0	0
299-Ma-01	0	0	0	3	3	0	0	0	0	0	0	0	0	Tr	0.25	0
301-Ma-01	0	0	0	Tr	0.25	Tr	10	0	0	0	0	0	0	Tr	0.25	0
303-Ma-01	0	0	0	1	1	0.25	100	0	0	0	0	0	0	Tr	0.25	0
305-Ma-01	0	0	0	0	0	90	900	0	0	0	0	0	0	0	0	0
307-Ma-01	2	0	0	2	2	0.5	80	0	0	0	0	0	0	Tr	0.25	0
311-Ma-01	3	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0
313-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315-Ma-01	0	0	0	1	1	Tr	2	0	0	0	0	0	0	0	0	0
317-Ma-01	0	0	0	Tr	0.25	5	2000	0	0	0	0	Tr	0.25	0	0.25	0
319-Ma-01	1	0	0	Tr	0.25	Tr	15	0	0	0	0	0	0	Tr	0.25	0
321-Ma-01	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
323-Ma-01	4	0	0	Tr	0.25	Tr	4	0	0	0	0	0	0	Tr	0.25	0
325-Ma-01	3	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0
327-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0	0	Tr	0.25	0
335-Ma-01	0	0	0	1	1	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0
337-Ma-01	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0	1	1	0
339-Ma-01	0	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0
341-Ma-01	3	0	0	3	3	0	0	0	0	0	0	0	0	Tr	0.25	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium																	
	Easting	Northing	An %	Ar %	Ch EG %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal EG %	Gth EG %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %			
349-Ma-01	564988	5519864	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
351-Ma-01	567115	5522100	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	2	0	0	0
353-Ma-01	566807	5522962	0	0	Tr	2	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
379-Ma-01	536825	5519411	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
381-Ma-01	536579	5521063	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	5	0	0	0
383-Ma-01	536556	5523615	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
385-Ma-01	537118	5524972	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	2	0	0	0
387-Ma-01	536598	5528071	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
389-Ma-01	537429	5537491	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	1	0	0	0
391-Ma-01	548084	5533412	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	2	0	0	0
393-Ma-01	548884	5533587	0	0	0	0	0	0	0	0	0	0.25	0	0.5	0.5	0	0	0	0	0
395-Ma-01	549136	5533583	0	0	Tr	1	0	0	0	0	0	0.25	0	Tr	0.25	Tr	2	0	0	0
397-Ma-01	562864	5535347	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
399-Ma-01	561911	5533029	0	0	Tr	1	0	0	0	0	0	0.25	0	Tr	0.25	0	1	0	0	0
401-Ma-01	561728	5496599	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0
403-Ma-01	547646	5509144	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	3	0	0	0
405-Ma-01	547540	5508167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
407-Ma-01	547705	5507390	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
409-Ma-01	561893	5531660	0	0	Tr	3	0	0	0	0	0	0.25	0	Tr	0.25	Tr	1	0	0	Tr
417-Ma-01	557227	5483999	0	0	Tr	1	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
419-Ma-01	565362	5486095	0	0	Tr	1	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
427-Ma-01	560413	5494855	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	Tr	1	0	Tr	1
435-Ma-01	548122	5500727	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
437-Ma-01	547117	5499433	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
439-Ma-01	546315	5498861	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
441-Ma-01	549191	5498807	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443-Ma-01	543371	5499589	0	0	Tr	12	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
445-Ma-01	542669	5500636	0	0	0	0	0	0	0	0	0	0.25	0	Tr	0.25	0	0	0	0	0
459-Ma-01	566242	5526514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
461-Ma-01	567001	5526401	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
463-Ma-01	567360	5526489	0	0	Tr	1	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium											
	Ng		Ol		Or		Py		Rr		Si	
	Pic.	Pic.	EG	%	EG	%	Pic.	EG	%	EG	%	Sps
349-Ma-01	1	0	0	Tr	0.25	Tr	8	0	0	0	0	0
351-Ma-01	0	0	0	Tr	0.25	Tr	25	0	0	0	0	0
353-Ma-01	3	0	0	1	1	Tr	10	0	0	0	0	0
379-Ma-01	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0
381-Ma-01	2	0	0	0.5	0.5	Tr	1	0	0	0	0	0
383-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0
385-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0
387-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
389-Ma-01	0	0	0	Tr	0.25	Tr	7	0	0	0	0	0
391-Ma-01	0	0	0	0.5	0.5	0	0	0	0	0	0	0
393-Ma-01	0	0	0	1	1	1	80	0	0	Tr	0.25	0
395-Ma-01	0	0	0	Tr	0.25	Tr	4	0	0	0	0	0
397-Ma-01	1	0	0	2	2	0	0	0	0	0	0	0
399-Ma-01	1	0	0	Tr	0.25	Tr	2	0	0	0	0	0
401-Ma-01	0	0	0	Tr	0.25	Tr	30	0	0	Tr	0.25	0
403-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0
405-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
407-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0
409-Ma-01	0	0	0	1	1	Tr	20	Tr	1	0	0	0
417-Ma-01	1	0	0	1	1	Tr	2	0	0	0	0	0
419-Ma-01	0	0	0	2	2	0	0	0	0	Tr	0.25	0
427-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0
435-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
437-Ma-01	2	0	0	0	0	60	150	0	0	0	0	0
439-Ma-01	4	0	0	Tr	0.25	Tr	20	0	0	Tr	0.25	0
441-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
443-Ma-01	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0
445-Ma-01	0	0	0	2	2	Tr	4	0	0	Tr	0.25	0
459-Ma-01	1	0	0	0	0	Tr	7	0	0	0	0	0
461-Ma-01	0	0	0	3	3	0	0	0	0	0	0	0
463-Ma-01	1	0	0	5	5	Tr	1	0	0	Tr	0.25	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium												Gr	Ky	Ldc	Lo		Mc		Mo
	Easting	Northing	An	Ar	Ch	Co	Cr	Cru	Gah	Gal	Gth	Pic.	%	%				EG	%	EG	%	
465-Ma-01	566934	5528457	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
467-Ma-01	568493	5529119	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0
469-Ma-01	570208	5526278	0	0	Tr	4	0	0	0	0	2	0	2	0	Tr	0.25	0	0	0	0	0	0
471-Ma-01	516824	5532845	0	0	0	0	Tr	1	Tr	1	0	0	0	0	0	Tr	0.25	0	0	0	0	0
473-Ma-01	518715	5534410	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
475-Ma-01	519608	5535305	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0
477-Ma-01	523095	5534733	0	0	Tr	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
479-Ma-01	520832	5532535	0	0	0	0	0	Tr	2	0	0	0	0	0	0	1	1	Tr	1	0	0	0
481-Ma-01	555726	5486501	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	2	0	0	Tr
489-Ma-01	552876	5485345	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
491-Ma-01	552094	5482450	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
506-Ma-01	550768	5502226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
509-Ma-01	566192	5508954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
523-Ma-01	560067	5510321	0	Tr	1	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0
531-Ma-01	560668	5511547	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
545-Ma-01	568147	5533150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
559-Ma-01	561068	5529657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
561-Ma-01	551754	5529258	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
563-Ma-01	552446	5528138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	Tr	2	0	0	0
565-Ma-01	554154	5529609	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	Tr	2	0	0	0
573-Ma-01	557266	5536558	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	Tr	2	0	0	0
575-Ma-01	557004	5534935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
589-Ma-01	555774	5517116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
591-Ma-01	558410	5520256	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
593-Ma-01	558453	5520142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0
595-Ma-01	560787	5520419	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	Tr	0	0	0	0
597-Ma-01	560765	5523345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	1	0	0	0
605-Ma-01	553854	5514504	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
607-Ma-01	553067	5513444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	Tr	1	0	0	0
609-Ma-01	547841	5512501	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	1	0	0	0
611-Ma-01	543881	5511002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium											
	Ng		Ol		Or		Py		Rr		Si	
	Pic.	EG	Pic.	EG	%	Pic.	EG	%	EG	%	EG	%
465-Ma-01	0	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25
467-Ma-01	0	0	0	0	0	0	0	0	0	0	Tr	0.25
469-Ma-01	0	0	0	0	1	1	Tr	20	0	0	0	0
471-Ma-01	0	0	0	0	1	1	0	0	0	0	0	0
473-Ma-01	1	0	0	5	5	0	0	0	0	0	0	0
475-Ma-01	0	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25
477-Ma-01	0	0	0	4	4	0.1	9	0	0	0	Tr	0.25
479-Ma-01	0	0	0	2	2	2	Tr	1	0	0	Tr	0.25
481-Ma-01	0	0	0	0	Tr	0.25	Tr	8	0	0	Tr	0.25
489-Ma-01	0	0	0	1	1	0	0	Tr	1	0	Tr	0.25
491-Ma-01	0	0	0	2	2	2	Tr	1	0	0	0	0
506-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0
509-Ma-01	2	0	0	2	2	2	0	0	0	0	0	0
523-Ma-01	1	0	0	2	2	2	Tr	30	0	0	0	0
531-Ma-01	1	0	0	1	1	0	0	0	0	0	0	0
545-Ma-01	0	0	0	1	1	0	0	0	0	Tr	0.25	0
559-Ma-01	0	0	0	0	0	0	Tr	3	0	0	Tr	0.25
561-Ma-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0
563-Ma-01	0	0	0	0	Tr	0.25	Tr	10	1	1	0	0
565-Ma-01	0	0	0	1	1	1	Tr	50	0	0	0	0
573-Ma-01	0	0	0	0	Tr	0.25	7	300	0	0	Tr	0.25
575-Ma-01	0	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25
589-Ma-01	3	0	0	0	Tr	0.25	0	0	0	0	0	0
591-Ma-01	0	0	0	5	5	0	0	0	0	0	0	0
593-Ma-01	0	0	0	5	5	0	0	0	0	0	0	0
595-Ma-01	0	0	0	8	8	8	Tr	3	0	0	0	0
597-Ma-01	0	0	0	8	8	8	Tr	8	0	0	0	0
605-Ma-01	0	0	0	0	Tr	0.25	70	200	0	0	0	0
607-Ma-01	0	0	0	0	Tr	0.25	Tr	15	0	0	0	0
609-Ma-01	1	0	0	7	7	7	0	0	0	0	0	0
611-Ma-01	0	0	0	2	2	2	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium																				
	Easting	Northing	An %	Ar %	Ch		Co		Cr		Cru		Gah Pic.	Gal %	Gth		Gr Pic.	Ky %	Ldc %	Lo		Me %	Mo %
					EG %	%	EG %	%	EG %	%	EG %	%			EG %	%				EG %	%		
625-Ma-01	538028	5518493	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	0	0	0	0	0	0
627-Ma-01	548504	5536655	0	0	0	Tr	2	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0	0	0
641-Ma-01	558708	5516001	0	0	0	Tr	2	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0	0	0
649-Ma-01	561721	5536347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
651-Ma-01	560002	5536206	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0	0	0
653-Ma-01	561921	5535718	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0	0	0
655-Ma-01	569281	5537577	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
657-Ma-01	569095	5536755	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
659-Ma-01	568979	5535947	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
661-Ma-01	536830	5489781	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	1	1	0	0	0
663-Ma-01	540062	5491454	0	0	0	Tr	3	0	0	0	0	0	0	0	0	Tr	0.25	0	0.5	0.5	0	0	0
665-Ma-01	546772	5491802	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
680-Ma-01	534717	5536317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
688-Ma-01	538686	5533337	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
732-Ma-01	555908	5536813	0	0	0	Tr	2	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
734-Ma-01	552915	5535918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
736-Ma-01	552003	5533792	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	1	1	0	0	0
738-Ma-01	551845	5532647	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1004-Ma-01	500954	5526341	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1018-Ma-01	545933	5472647	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1020-Ma-01	548200	5471934	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0.25	0.25	0	0	0
1028-Ma-01	541934	5470669	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1030-Ma-01	501747	5526781	0	0	0	Tr	2	0	0	Tr	2	Tr	1	0	0	0	0	0	0.25	0.25	0	0	0
1038-Ma-01	538366	5470614	0	0	0	Tr	1	0	0	Tr	8	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1046-Ma-01	538766	5474397	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1048-Ma-01	536523	5471696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.25	0	0	0
1056-Ma-01	542100	5470121	0	0	0	0	0	0	0	Tr	1	0	0	0	0	Tr	0.25	0	0	0	0	0	0
1058-Ma-01	537885	5478534	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.25	0	0	0
1066-Ma-01	561421	5475024	0	0	0	0	0	0	0	Tr	2	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0
1068-Ma-01	560845	5475250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.25	0	0	0
1070-Ma-01	560191	5479647	0	0	0	0	0	0	0	Tr	1	0	0	0	0	Tr	0.25	0	0.25	0.25	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium														Tou Pic.
	Ng Pic.	OI Pic.	Or		Py		Rt		Si		Sps		Sp Pic.	St %	
			EG %	%	EG %	%	EG %	%	EG %	%					
625-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
627-Ma-01	0	0	0	Tr	0.25	Tr	15	0	0	0	0	0	0	Tr	0.25
641-Ma-01	1	0	0	2	2	Tr	30	0	0	0	0	0	0	Tr	0.25
649-Ma-01	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0
651-Ma-01	1	0	0	Tr	0.25	Tr	30	0	0	0	0	0	0	0	0
653-Ma-01	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
655-Ma-01	0	0	0	5	5	Tr	7	0	0	0	0	0	2	Tr	0.25
657-Ma-01	0	0	0	5	5	Tr	4	0	0	0	0	0	1	Tr	0.25
659-Ma-01	0	0	0	7	7	Tr	5	0	0	0	0	0	0	0.5	0.5
661-Ma-01	3	0	0	0.5	0.5	Tr	2	0	0	0	0	0	0	Tr	0.25
663-Ma-01	0	1	1	Tr	0.25	5	800	0	0	Tr	0.25	0	0	Tr	0.25
665-Ma-01	1	0	0	5	5	0	0	0	0	0	0	0	0	Tr	0.25
680-Ma-01	0	0	0	0	0	6	20	0	0	0	0	0	0	0	0
688-Ma-01	0	0	0	Tr	0.25	Tr	3	Tr	1	Tr	0.25	0	0	Tr	0.25
732-Ma-01	0	0	0	1	1	0.5	75	0	0	0	0	0	0	3	3
734-Ma-01	0	0	0	1	1	Tr	15	0	0	Tr	0.25	0	0	2	2
736-Ma-01	0	0	0	2	2	0	0	0	0	Tr	0.25	0	0	Tr	0.25
738-Ma-01	0	0	0	2	2	Tr	1	0	0	0	0	0	1	Tr	0.25
1004-Ma-01	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	Tr	0.25
1018-Ma-01	1	0	0	0.5	0.5	0	0	0	0	Tr	0.25	0	0	Tr	0.25
1020-Ma-01	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	Tr	0.25
1028-Ma-01	1	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25	0	0	Tr	0.25
1030-Ma-01	0	0	0	Tr	0.25	Tr	5	0	0	Tr	0.25	0	0	Tr	0.25
1038-Ma-01	1	0	0	Tr	0.25	Tr	3	0	0	Tr	0.25	0	2	Tr	0.25
1046-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0
1048-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
1056-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25
1058-Ma-01	0	0	0	Tr	0.25	Tr	20	0	0	0	0	0	1	0	0
1066-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1068-Ma-01	0	0	0	0	0	15	1200	0	0	0	0	0	0	0	0
1070-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium																			
	Easting	Northing	An %	Ar %	Ch %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal %	Gth %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %					
1072-Ma-01	538764	5477824	0	0	0	1	Tr	1	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1074-Ma-01	541469	5478644	0	0	0	0	0	3	0	0	0	0	0	Tr	37	0	0	0	0	0	0	0
1076-Ma-01	541322	5474619	0	0	0	0	0	0	0	0	0	0	0	Tr	9	0	0	0	0	0	0	0
1084-Ma-01	562816	5474220	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1086-Ma-01	563151	5472966	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1088-Ma-01	568049	5469902	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1096-Ma-01	541017	5475832	0	0	0	0	0	0	0	0	0	0	0	Tr	3	0	0	0	0	0	0	0
1098-Ma-01	544048	5481843	0	0	0	0	0	1	0	0	0	0	0	Tr	8	0	0	0	0	0	0	0
1106-Ma-01	545230	5480748	0	0	0	0	0	0	0	0	0	0	0	Tr	2	0	0	0	0	0	0	0
1110-Ma-01	544017	5479126	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1114-Ma-01	550108	5471534	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1116-Ma-01	571300	5477471	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1124-Ma-01	569985	5471981	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1132-Ma-01	569580	5470576	0	0	0	0	0	0	0	0	0	0	0	Tr	3	0	0	0	0	0	0	0
1140-Ma-01	512036	5524571	0	0	0	0	0	3	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1142-Ma-01	511635	5524543	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1144-Ma-01	514091	5525593	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1152-Ma-01	519304	5527642	0	0	0	2	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1160-Ma-01	510216	5536546	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1162-Ma-01	513357	5531102	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1172-Ma-01	514838	5529972	0	0	0	1	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1180-Ma-01	501739	5534251	0	0	0	0	0	0	0	0	0	0	0	Tr	2	0	0	0	0	0	0	10
1315-Ma-01	503885	5530559	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1316-Ma-01	508138	5531166	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1317-Ma-01	523533	5524344	0	0	0	2	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1319-Ma-01	531794	5529443	0	0	0	3	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1320-Ma-01	541572	5533818	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	2
1322-Ma-01	546190	5534808	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1323-Ma-01	564603	5525479	0	0	0	7	0	0	0	0	0	0	0	Tr	0	0	0	0	0	0	0	0
1325-Ma-01	557800	5525000	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0
1327-Ma-01	553710	5522334	0	0	0	0	0	0	0	0	0	0	0	Tr	3	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium																
	Ng Pic.	Ol Pic.	Or		Py		Rr		Si		Sps		Sp Pic.	St %	Tou Pic.		
			EG	%	Pic.	EG	%	EG	%	%	%						
1072-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0	
1074-Ma-01	0	5	5	1	1	0	0	0	0	0	Tr	0.25	0	0	Tr	0.25	0
1076-Ma-01	1	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	Tr	0.25	0
1084-Ma-01	0	0	0	0.5	0.5	Tr	1	0	0	Tr	0.25	0	0	0	0	0	0
1086-Ma-01	1	0	0	0	0	Tr	3	0	0	0	0	0	0	0	0	0	0
1088-Ma-01	0	0	0	1	1	0	0	0	0	Tr	0.25	0	0	Tr	0.25	0	0
1096-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0	0
1098-Ma-01	1	0	0	1	1	0	0	0	0	0	0	0	1	Tr	0.25	0	0
1106-Ma-01	0	0	0	Tr	0.25	Tr	5	0	0	0	0	0	0	Tr	0.25	0	0
1110-Ma-01	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
1114-Ma-01	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0
1116-Ma-01	0	0	0	Tr	0.25	Tr	10	0	0	Tr	0.25	0	0	0	0	0	0
1124-Ma-01	0	0	0	Tr	0.25	0	0	Tr	1	Tr	0.25	0	1	2	2	0	0
1132-Ma-01	0	0	0	2	2	0	0	0	0	Tr	0.25	0	0	0	0	0	0
1140-Ma-01	0	0	0	Tr	0.25	Tr	5	0	0	Tr	0.25	0	0	Tr	0.25	0	0
1142-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	1	Tr	0.25	0	0
1144-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0	0
1152-Ma-01	0	0	0	1	1	Tr	20	0	0	0	0	0	0	Tr	0.25	0	0
1160-Ma-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0	0
1162-Ma-01	0	0	0	Tr	0.25	Tr	8	0	0	0	0	0	0	Tr	0.25	0	0
1172-Ma-01	0	0	0	Tr	0.25	2	150	0	0	0	0	0	0	Tr	0.25	0	0
1180-Ma-01	0	0	0	3	3	0	0	0	0	0	0	0	0	Tr	0.25	0	0
1315-Ma-01	0	0	0	2	2	0	0	0	0	0	0	0	1	Tr	0.25	0	0
1316-Ma-01	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0	0	0	0	0
1317-Ma-01	0	0	0	0	0	2	150	0	0	0	0	0	0	Tr	0.25	0	0
1319-Ma-01	0	0	0	Tr	0.25	1	200	0	0	0	0	0	0	Tr	0.25	0	0
1320-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1322-Ma-01	0	0	0	0	0	0.5	100	0	0	0	0	0	0	Tr	0.25	0	0
1323-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1325-Ma-01	0	0	0	Tr	0.25	Tr	4	0	0	0	0	0	0	0	0	0	0
1327-Ma-01	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample NNumber	U.T.M.'s		Modern Alluvium																	
	Easting	Northing	An %	Ar %	Ch EG %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal EG %	Gth EG %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %			
1329-Ma-01	542276	5518266	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0		
1330-Ma-01	550968	5492915	0	0	0	0	Tr	12	0	0	0	0	Tr	0.25	1	0.5	0.5	0		
1332-Ma-01	547908	5489346	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1333-Ma-01	549871	5485978	0	0	0	0	Tr	4	Tr	1	0	0	0	0	1	0.5	0.5	0		
1335-Ma-01	543319	5485813	0	0	0	0	Tr	1	0	0	0	0	Tr	0.25	0	Tr	0.25	0		
1337-Ma-01	540215	5481616	0	0	0	0	0	0	0	0	Tr	1	Tr	0.25	0	0	0	0		
1339-Ma-01	545954	5477791	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	1	1	0		
1340-Ma-01	547982	5482940	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	2	0		
1342-Ma-01	554017	5481911	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0		
1343-Ma-01	557254	5478166	0	0	0	Tr	14	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0		
1345-Ma-01	564963	5480292	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0		
1347-Ma-01	571589	5497744	0	0	0	0	0	Tr	1	0	0	0	Tr	0.25	0	1	1	0		
1349-Ma-01	568861	5484699	0	0	0	Tr	1	0	0	0	0	0	0	0	0	1	Tr	0.25		
1351-Ma-01	566484	5477324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1353-Ma-01	545639	5491169	0	0	0	Tr	1	0	0	0	0	Tr	0.25	1	Tr	0.25	Tr	4		
1355-Ma-01	553865	5490179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1356-Ma-01	556820	5481013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1357-Ma-01	555758	5475166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1361-Ma-01	554526	5470725	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1362-Ma-01	572000	5474000	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0		
2000-Ma-01	550134	5481794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	1		
2008-Ma-01	529515	5530434	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2010-Ma-01	528646	5530045	0	0	0	Tr	2	0	0	0	0	0	0	0	0	0	0	0		
2012-Ma-01	528134	5531991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2014-Ma-01	527841	5531687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2016-Ma-01	525051	5531133	0	0	0	Tr	6	0	0	0	0	0	Tr	0.25	0	0	0	0		

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Modern Alluvium															
	Ng		Ol		Or		Py		Rr		Si		Sps		Sp	
	Pic.	%	Pic.	%	EG	%	Pic.	%	EG	%	EG	%	%	%	Pic.	%
1329-Ma-01	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
1330-Ma-01	0	0	0	0	Tr	0.25	0.5	120	0	0	Tr	0.25	0	0	Tr	0.25
1332-Ma-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	Tr	0.25	0	0
1333-Ma-01	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	Tr	0.25
1335-Ma-01	0	1	1	1	Tr	0.25	Tr	50	0	0	0	0	0	0	1	Tr
1337-Ma-01	0	0	0	0	Tr	0.25	3	50	0	0	0	0	0	0	Tr	0.25
1339-Ma-01	0	0	0	0	2	2	0	0	0	0	Tr	0.25	0	0	Tr	0.25
1340-Ma-01	0	1	1	1	5	5	0	0	0	0	Tr	0.25	0	0	2	2
1342-Ma-01	0	0	0	0	Tr	0.25	Tr	2	0	0	0	0	0	0	Tr	0.25
1343-Ma-01	0	0	0	0	0	0	1	150	0	0	0	0	0	0	Tr	0.25
1345-Ma-01	0	0	0	0	Tr	0.25	Tr	15	0	0	0	0	0	0	Tr	0.25
1347-Ma-01	0	0	0	0	0	0	5	1000	0	0	0	0	0	0	Tr	0.25
1349-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25
1351-Ma-01	0	0	0	0	2	2	0.1	15	0	0	Tr	0.25	0	0	1	1
1353-Ma-01	0	0	0	0	2	2	Tr	20	0	0	0	0	0	0	1	1
1355-Ma-01	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1356-Ma-01	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1357-Ma-01	0	0	0	0	2	2	5	500	0	0	0	0	0	0	Tr	0.25
1361-Ma-01	2	0	0	1	1	1	0	0	0	0	0	0	0	0	Tr	0.25
1362-Ma-01	0	0	0	0	Tr	0.25	Tr	1	Tr	1	0	0	0	0	Tr	0.25
2000-Ma-01	0	0	0	0	2	2	0	0	0	0	0	0	0	0	Tr	0.25
2008-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010-Ma-01	0	0	0	0	0	0	5	600	0	0	0	0	0	0	0	0
2012-Ma-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25
2014-Ma-01	0	0	0	0	0	0	3	40	0	0	Tr	0.25	0	0	Tr	0.25
2016-Ma-01	0	0	0	0	Tr	0.25	Tr	20	0	0	0	0	0	0	Tr	0.25

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Modern Alluvium																	
	Easting	Northing	An %	Ar %	Ch EG %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal %	Gth %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %			
Modern Alluvium Orientation Surveys																				
Golden Tiger Orientation Survey																				
690-Ma-01	585837	5515620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
706-Ma-01	585714	5514243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Pic River Orientation Survey																				
1395-Ma-01	554815	5494471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1397-Ma-01	555008	5494372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1399-Ma-01	555160	5494154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Till																				
Sample Number	U.T.M.'s		An %	Ar %	Ch EG %	Co EG %	Cr EG %	Cru EG %	Gah Pic.	Gal %	Gth %	Gr Pic.	Ky %	Ldc %	Lo EG %	Me EG %	Mo EG %			
	Easting	Northing																		
6-Tm-01	559811	5484202	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0		
19-Tm-01	560921	5488814	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0		
27-Tm-01	560208	5488145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
33-Tm-01	561929	5491783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
43-Tm-01	558537	5494470	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0		
63-Tm-01	568610	5495777	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
71-Tm-01	562839	5501435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
79-Tm-01	559733	5498182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
80-Tm-01	559733	5498182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
93-Tm-01	554795	5504275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
131-Tm-01	541394	5501774	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
137-Tm-01	556016	5489430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
149-Tm-01	543725	5506491	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
163-Tm-01	538054	5498105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
169-Tm-01	539730	5503144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
175-Tm-01	544314	5499428	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Till		An %	Ar %	Ch %	Co		Cr %	Cru %	Gah Pic.	Gal %	Gth %	Gr Pic.	Ky %	Ldc %	Lo %	Me %	Mo %
	Easting	Northing	EG %	EG %				EG %	EG %											
187-Tm-01	537932	5487405	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
193-Tm-01	539627	5485334	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	Tr 1	0	0	0
199-Tm-01	541824	5483635	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	Tr 3	0	0	0
213-Tm-01	544144	5489543	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
219-Tm-01	571307	5469690	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
231-Tm-01	564077	5471808	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
237-Tm-01	547178	5474670	0	0	0	0	0	0	Tr 10	0	0	0	0	0	0	Tr 0.25	0.5	86	0	0
245-Tm-01	551489	5476900	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
253-Tm-01	552980	5472020	0	0	0	0	0	0	0	0	0	0	0	0	0	1	Tr 1	0	Tr 1	0
265-Tm-01	560177	5506117	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 1	0	0	0
333-Tm-01	569475	5518772	0	0	0	0	0	0	Tr 1	0	0	0	0	5	5	Tr 0.25	Tr 1	0	0	0
347-Tm-01	563998	5519844	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	Tr 1	0	0	0
359-Tm-01	566153	5521729	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 3	0	0	0
365-Tm-01	570792	5515609	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
371-Tm-01	557548	5514673	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 1	0	0	0
377-Tm-01	561471	5515140	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	2	0	0	0
415-Tm-01	567592	5532784	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 3	0	0	0
425-Tm-01	566512	5486056	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 1	0	0	0
433-Tm-01	550012	5497000	0	0	0	0	0	0	0	0	Tr 1	0	0	0	0	Tr 0.25	0	0	0	0
451-Tm-01	543137	5494205	0	0	0	0	0	0	Tr 1	0	0	0	0	Tr 0.25	0	Tr 0.25	Tr 1	0	0	0
457-Tm-01	547198	5495505	0	0	0	0	0	0	Tr 2	0	0	0	0	0	0	Tr 0.25	0	0	0	0
487-Tm-01	555768	5485578	0	0	0	0	0	0	0	0	Tr 1	0	0	2	2	Tr 0.25	Tr 2	0	0	0
497-Tm-01	549641	5481575	0	0	0	0	0	0	Tr 1	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
504-Tm-01	550192	5504934	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
514-Tm-01	568461	5509547	0	0	0	0	0	0	0	0	0	0	0	1	1	Tr 0.25	0	0	0	0
520-Tm-01	565861	5509196	0	0	0	0	0	0	Tr 1	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
528-Tm-01	559999	5510706	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
537-Tm-01	555345	5494188	0	0	0	0	0	0	Tr 1	0	0	0	0	Tr 0.25	0	Tr 0.25	0	0	0	0
543-Tm-01	570542	5532637	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0
551-Tm-01	563096	5531932	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	Tr 1	0	0	0
557-Tm-01	561414	5529862	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr 0.25	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Till (Continued)															
	Ng		Ol		Or		Py		Rr		Si		Sps		Sp	
	Pic.	Pic.	Pic.	Pic.	%	%	Pic.	Pic.	%	%	EG	%	%	%	Pic.	%
187-Tm-01	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	Tr
193-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr
199-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213-Tm-01	0	0	0	0	3	3	0	0	0	0	0	0	0	0	1	Tr
219-Tm-01	0	0	0	0	1	1	0	0	0	0	Tr	0.25	0	0	0	Tr
231-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr
237-Tm-01	0	68	382	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr
245-Tm-01	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	Tr
253-Tm-01	0	0	0	5	5	0	0	0	0	0	0	0	Tr	0.25	1	2
265-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr
333-Tm-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	Tr
347-Tm-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
359-Tm-01	2	0	0	1	1	0	0	0	0	0	0	0	Tr	0.25	0	Tr
365-Tm-01	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	Tr
371-Tm-01	7	0	0	1	1	Tr	1	0	0	0	0	0	0	0	0	Tr
377-Tm-01	6	0	0	3	3	0	0	0	0	0	0	0	0	0	0	Tr
415-Tm-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	Tr
425-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
433-Tm-01	0	0	0	1	1	Tr	5	0	0	0	0	0	0	0	0	Tr
451-Tm-01	3	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr
457-Tm-01	0	0	0	7	7	0	0	Tr	2	Tr	0.25	0	0	0	0	Tr
487-Tm-01	0	0	0	1	1	Tr	1	0	0	Tr	0.25	0	0	0	1	1
497-Tm-01	0	0	0	0	0	Tr	10	0	0	0	0	0	0	0	0	Tr
504-Tm-01	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
514-Tm-01	3	0	0	7	7	0	0	0	0	0	0	0	0	0	0	Tr
520-Tm-01	3	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
528-Tm-01	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
537-Tm-01	4	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	Tr
543-Tm-01	0	0	0	2	2	Tr	2	0	0	Tr	0.25	0	0	0	0	0
551-Tm-01	1	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	Tr
557-Tm-01	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	Tr

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Till		Ar	Ch	Co		Cr		Cru		Gah	Gal	Gth	Gr	Ky	Ldc	Lo	Me	Mo
	Easting	Northing	%	EG			%	EG	%	EG	%	Pic.									
570-Tm-01	559325	5536958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
580-Tm-01	557031	5534933	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
586-Tm-01	554660	5532552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
603-Tm-01	537242	5524732	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
617-Tm-01	538912	5513093	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
623-Tm-01	537237	5516400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
633-Tm-01	548366	5536706	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
639-Tm-01	562530	5517488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
647-Tm-01	559282	5516252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
671-Tm-01	539722	5492737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
677-Tm-01	570826	5527103	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0
686-Tm-01	534809	5536042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
723-Tm-01	539991	5533337	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729-Tm-01	542001	5534925	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1011-Tm-01	501790	5526230	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0
1016-Tm-01	543579	5472302	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0
1025-Tm-01	547792	5471086	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0
1036-Tm-01	506747	5525472	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0
1044-Tm-01	539183	5474443	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1054-Tm-01	537485	5469495	0	0	0	0	0	0	0	Tr	3	0	0	0	0	0	0	0	0	0	0
1064-Tm-01	539308	5478568	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0
1082-Tm-01	562073	5474522	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1094-Tm-01	541535	5475633	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1104-Tm-01	545075	5481107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1122-Tm-01	571033	5476898	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1124-Tm-01	571033	5476898	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1130-Tm-01	569649	5474524	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1138-Tm-01	569491	5472289	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1150-Tm-01	512361	5525826	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1158-Tm-01	516318	5526571	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1170-Tm-01	511063	5534919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Till (Continued)																		
	Ng		Ol		Or		Py		Rr		Si		Sps		Sp		St		Tou Pic.
	Pic.	Pic.	Pic.	Pic.	EG	%	Pic.	EG	%	EG	%	%	%	Pic.	%	%	%		
570-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
580-Tm-01	0	0	0	0	Tr	0.25	0	0	Tr	1	0	0	0	0	0	Tr	0.25	0	
586-Tm-01	2	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
603-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
617-Tm-01	0	0	0	0	Tr	0.25	Tr	4	Tr	1	0	0	0	0	0	Tr	0.25	0	
623-Tm-01	0	0	0	0	2	2	Tr	1	0	0	0	0	0	0	0	1	Tr	0.25	0
633-Tm-01	2	0	0	0	3	3	Tr	3	0	0	0	0	0	0	0	1	0	0	0
639-Tm-01	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
647-Tm-01	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
671-Tm-01	2	0	0	0	Tr	0.25	0	0	Tr	1	0	0	0	0	0	0	0	0	0
677-Tm-01	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
686-Tm-01	0	0	0	0	Tr	0.25	Tr	2	0	0	0	0	0	0	0	0	0.5	0.5	0
723-Tm-01	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0
729-Tm-01	0	0	0	0	Tr	0.25	Tr	5	Tr	1	Tr	0.25	0	0	0	0	Tr	0.25	0
1011-Tm-01	6	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	
1016-Tm-01	4	0	0	0	0.5	0.5	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
1025-Tm-01	0	0	0	0	Tr	0.25	Tr	20	0	0	Tr	0.25	0	0	0	Tr	0.25	0	
1036-Tm-01	6	0	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25	0	0	1	Tr	0.25	0	
1044-Tm-01	0	0	0	0	2	2	3	400	0	0	0	0	0	0	0	0	0	0	0
1054-Tm-01	2	0	0	0	2	2	Tr	30	Tr	2	0	0	0	0	0	Tr	0.25	0	
1064-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1082-Tm-01	1	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0
1094-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1104-Tm-01	1	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	
1122-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0
1124-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0	
1130-Tm-01	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0
1138-Tm-01	0	0	0	0	0	0	Tr	6	Tr	1	Tr	0.25	0	0	0	0	0	0	0
1150-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	
1158-Tm-01	6	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0
1170-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr	0.25	0	

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Till		Ar		Ch		Co		Cr		Cru		Gah		Gal		Gth		Gr		Ky		Ldc		Lo		Me		Mo	
	Easting	Northing	An %	Ar %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	Pic.	Pic.	%	%	%	%	%	%	Pic.	%	%	%	%	%	%	%	%	%	
1178-Tm-01	513228	5531846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	
1186-Tm-01	515560	5536699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	
2006-Tm-01	551529	5482343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Till Orientation Surveys

Golden Tiger Orientation Survey																																
696-Tm-01	585999	5514356	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0
702-Tm-01	585922	5514361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0
712-Tm-01	585560	5513835	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	Tr	0.25	0	2	0	3	0	0	0	0	0
717-Tm-01	585669	5513963	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0

Pic River Orientation Survey

1365-Tm-01	555268	5494714	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1367-Tm-01	555282	5494493	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0
1370-Tm-01	555273	5494366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0
1373-Tm-01	555418	5494421	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	Tr	1	0
1377-Tm-01	555358	5494678	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	0
1380-Tm-01	555404	5494587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0
1383-Tm-01	555360	5494400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0
1387-Tm-01	555311	5494637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1390-Tm-01	555337	5494483	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0

Sample Number	U.T.M.'s		Esmer		Ar		Ch		Co		Cr		Cru		Gah		Gal		Gth		Gr		Ky		Ldc		Lo		Me		Mo	
	Easting	Northing	An %	Ar %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	EG %	Pic.	Pic.	Pic.	Pic.	EG %	EG %	Pic.	Pic.	%	%	%	%	EG %	EG %	EG %	EG %	EG %	EG %
2020-ES-01	500252	5526401	0	Tr	3	Tr	7	0	0	0	Tr	3	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0
2026-ES-01	561600	5493200	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	2	0	0	0	0	0	0
2030-ES-01	562200	5494900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0
2036-ES-01	559300	5513000	0	Tr	1	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0
2038-ES-01	569550	5517350	0	Tr	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	Tr	1	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Till (Continued)													
	Ng		Or		Py		Rr		Si		Sps		St	
	Pic.	EG	Pic.	EG	%	Pic.	EG	%	EG	%	%	Pic.	%	Tou

1178-Tm-01	0	0	0	1	1	0	0	0	Tr	0.25	0	0	0	Tr	0.25	0
1186-Tm-01	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	Tr	0.25	0
2006-Tm-01	0	0	0	0	0	0	0	0	Tr	0.25	0	0	0	0	0	0

Till Orientation Surveys (Continued)

Golden Tiger Orientation Survey (Continued)																	
696-Tm-01	0	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25	0	0	0	Tr	0.25	0
702-Tm-01	0	0	0	2	2	0	0	Tr	1	Tr	0.25	0	0	0	Tr	0.25	0
712-Tm-01	0	0	0	Tr	0.25	Tr	5	0	0	0	0	0	0	0	2	2	0
717-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	Tr	0.25	0

Pic River Orientation Survey (Continued)																
1365-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1367-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
1370-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
1373-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1377-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	0
1380-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1383-Tm-01	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	Tr	0.25	0
1387-Tm-01	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1390-Tm-01	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0

Sample Number	Esker (Continued)													
	Ng		Or		Py		Rr		Si		Sps		St	
	Pic.	EG	Pic.	EG	%	Pic.	EG	%	EG	%	%	Pic.	%	Tou

2020-ES-01	0	0	0	Tr	0.25	Tr	15	0	0	0	0	0	0	0	0	0
2026-ES-01	0	0	0	2	2	0	0	Tr	1	0	0	0	0	Tr	0.25	0
2030-ES-01	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	1	Tr	0.25
2036-ES-01	0	0	0	Tr	0.25	0	0	0	0	Tr	0.25	0	0	Tr	0.25	0
2038-ES-01	0	0	0	1	1	Tr	1	0	0	0	0	0	0	Tr	0.25	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	U.T.M.'s		Glaciofluvial																													
	Easting	Northing	An %	Ar		Ch		Co		Cr		Cru		Gah		Gal		Gth		Gr		Ky		Ldc		Lo		Me		Mo		
				%	EG	%	EG	%	EG	%	EG	%	EG	%	Pic.	%	EG	%	Pic.	%	EG	%	Pic.	%	EG	%	EG	%	EG	%	EG	%
2018-GF-01	571500	5469700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	0	0	0	0	0	0	0	0	0
2022-GF-01	560300	5475500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	Tr	2	0	0	0	Tr	3	0	0
2024-GF-01	549100	5470600	0	0	0	0	0	0	0	0	0	0	0	Tr	1	0	0	0	0	Tr	0.25	0	0	0	0	0	0	0	0	0	0	

Sample Number	U.T.M.'s		Recessional Moraine																											
			Northing		An %	Ar		Ch %	Co		Cr %	Cru		Gah Pic.	Gal %	Gth		Gr Pic.	Ky %	Ldc		Lo		Me		Mo				
			%			%	EG %		%	EG %		%	EG %			%	EG %			%	EG %	%	EG %	%	EG %	%	EG %	%	EG %	%
2028-MR-01	558500	5493800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	Tr	2	0	0	0	0	0	0	0
2034-MR-01	563850	5509600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	Tr	0.25	Tr	1	0	0	0	0	0	0	0
2046-MR-01	537595	5528713	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0.25	0	Tr	0.25	Tr	2	0	0	0	0	0	0	0
2048-MR-01	559985	5529271	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 2b: Picked and Estimated Metamorphosed and/or Magmatic Massive Sulphide Indicator Minerals (Continued)

Sample Number	Glaciofluvial (Continued)													
	Ng		Ol		Or		Py		Rr		Si		Sps	
	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%
2018-GF-01	0	0	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25	0	0
2022-GF-01	0	0	0	0	2	2	0	0	0	0	Tr	0.25	0	0
2024-GF-01	0	0	0	0	Tr	0.25	Tr	4	0	0	Tr	0.25	0	0

Sample Number	Recessional Moraine (Continued)													
	Ng		Ol		Or		Py		Rr		Si		Sps	
	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%	Pic.	%
2028-MR-01	0	0	0	0	1	1	Tr	2	0	0	0	0	0	0
2034-MR-01	0	0	0	0	Tr	0.25	Tr	1	0	0	Tr	0.25	0	0
2046-MR-01	0	0	0	0	2	2	0	0	0	0	0	0	0	0
2048-MR-01	3	0	0	0	3	3	Tr	8	0	0	Tr	0.25	0	0

APPENDIX 3: Summary of Cr-pyrope Grain Physical Features

Summary List of Abbreviations

The year number (-01) has been dropped from the sample number. Instead, the grain number has been added where the sample has had more than 1 grain recovered from the heavy mineral concentrate.

Cr:	Chromite
DC:	Chrome diopside
Es:	Esker
Gf:	Glaciofluvial
GO:	Eclogite garnet
GP:	Cr-pyrope garnet
IM:	Mg-Ilmenite
KIM:	Kimberlite indicator mineral
Ma:	Modern alluvium
Mr:	Recessional moraine
ODM:	Overburden Drilling Management Limited
OGL:	Ontario Geoscience Laboratories
Tm:	Till

Appendix 3: Summary of Cr-pyrope Grain Physical Features

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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0073-01-Ma	0.82315	Rounded (Subrounded)	Disk	A
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				

0087-Ma	No Data	No Data	No Data	No Data
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				
1 Cr grain pitted (OGL Comment)				

0097-08-Ma	0.43697	Subangular (Subrounded)	Roller	C
0097-09-Ma	0.57423	Subrounded (Subangular)	Disk	C
0097-10-Ma	0.56703	Subrounded (Subangular)	Blade	A
0097-10-Ma	0.61092	Subrounded	Blade	A
0097-11-Ma	0.7511	Rounded (Subrounded)	Blade	B
0097-12-Ma	0.45444	Subangular (Subrounded)	Blade	B
0097-13-Ma	0.59119	Subrounded	Blade	B
0097-14-Ma	0.56035	Subrounded (Subangular)	Blade	B
0097-15-Ma	0.5257	Subrounded (Subangular)	Blade	B
0097-16-Ma	0.61159	Subrounded	Blade	B
0097-17-Ma	0.47267	Subangular (Subrounded)	Blade	C
0097-18-Ma	0.6038	Subrounded	Blade	C
0097-19-Ma	0.69988	Subrounded (Rounded)	Disk	C
0097-20-Ma	0.39232	Subangular	Blade	D
0097-21-Ma	0.82042	Rounded (Subrounded)	Disk	D
0097-22-Ma	No Data	No Data	No Data	No Data
0097-23-Ma	No Data	No Data	No Data	No Data
0097-24-Ma	No Data	No Data	No Data	No Data
0097-25-Ma	No Data	No Data	No Data	No Data
0097-26-Ma	0.45933	Subangular (Subrounded)	Roller	D
0097-27-Ma	0.57161	Subrounded (Subangular)	Blade	G
0097-28-Ma	No Data	No Data	No Data	No Data
0097-29-Ma	0.65535	Subrounded	Disk	G
0097-30-Ma	0.52946	Subrounded (Subangular)	Blade	G
0097-31-Ma	0.71364	Subrounded (Rounded)	Blade	G
0097-32-Ma	0.62538	Subrounded	Blade	G
0097-33-Ma	0.71575	Subrounded (Rounded)	Disk	H
0097-34-Ma	0.71921	Subrounded (Rounded)	Disk	H

Appendix 3: Summary of Cr-pyroxene Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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0097-35-Ma	No Data	No Data	No Data	No Data
0097-36-Ma	No Data	No Data	No Data	No Data
0097-37-Ma	0.75384	Rounded (Subrounded)	Blade	H
0097-38-Ma	No Data	No Data	No Data	No Data
0097-39-Ma	0.54769	Subrounded (Subangular)	Disk	I
0097-40-Ma	0.45479	Subangular (Subrounded)	Roller	I
0097-41-Ma	0.52688	Subrounded (Subangular)	Blade	I
0097-42-Ma	0.69758	Subrounded (Rounded)	Disk	I
0097-43-Ma	0.37817	Subangular	Roller	I
0097-44-Ma	0.71187	Subrounded (Rounded)	Blade	K
0097-45-Ma	0.58564	Subrounded	Blade	N

Primary KIM grains, close to source (ODM Cover Letter Comment)

2 IM grains exsolved, 1 Cr very pitted (OGL Comment)

0107-03-Ma	0.42142	Subangular (Subrounded)	Blade	C
0107-04-Ma	0.57262	Subrounded (Subangular)	Disk	B
0107-05-Ma	0.52232	Subrounded (Subangular)	Roller	B
0107-06-Ma	0.51806	Subrounded (Subangular)	Blade	B
0107-07-Ma	0.63956	Subrounded	Blade	J
0107-08-Ma	0.70241	Subrounded (Rounded)	Disk	K
0107-09-Ma	No Data	No Data	No Data	No Data

0109-02-Ma	0.50009	Subrounded (Subangular)	Blade	A
0109-03-Ma	0.45503	Subangular (Subrounded)	Roller	A
0109-04-Ma	0.50619	Subrounded (Subangular)	Blade	A
0109-05-Ma	0.6412	Subrounded	Blade	A
0109-06-Ma	0.624	Subrounded	Blade	J
0109-07-Ma	0.65627	Subrounded	Blade	J
0109-08-Ma	0.44897	Subangular (Subrounded)	Roller	J
0109-09-Ma	0.54756	Subrounded (Subangular)	Disk	J
0109-10-Ma	0.54411	Subrounded (Subangular)	Blade	J
0109-11-Ma	0.60254	Subrounded	Blade	J
0109-12-Ma	0.50688	Subrounded (Subangular)	Blade	J
0109-13-Ma	0.56866	Subrounded (Subangular)	Blade	J
0109-14-Ma	0.66174	Subrounded	Disk	L

Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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0109-15-Ma	0.67833	Subrounded (Rounded)	Disk	L
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0123-03-Ma	0.68973	Subrounded (Rounded)	Disk	L
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0123-04-Ma	0.73228	Subrounded (Rounded)	Blade	O
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0125-01-Ma	0.62669	Subrounded	Blade	I
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0125-02-Ma	No Data	No Data	No Data	No Data
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0139-Ma	No Data	No Data	No Data	No Data
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1 IM grain exsolved (OGL Comment)

0181-01-Ma	0.77225	Rounded (Subrounded)	Disk	M
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0181-01-Ma	0.72829	Subrounded (Rounded)	Disk	M
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0205-01-Ma	0.44998	Subangular (Subrounded)	Blade	B
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0205-01-Ma	0.45488	Subangular (Subrounded)	Blade	B
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0207-01-Ma	0.62741	Subrounded	Blade	B
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0207-02-Ma	0.67674	Subrounded (Rounded)	Blade	H
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0207-03-Ma	0.60501	Subrounded	Blade	M
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0221-Ma	No Data	No Data	No Data	No Data
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4 IM grains exsolved (OGL Comment)

0239-02-Ma	0.73881	Subrounded (Rounded)	Disk	H
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0239-02-Ma	0.70245	Subrounded (Rounded)	Disk	H
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1 worn GO (ODM KIM Comment)

0301-01-Ma	0.52223	Subrounded (Rounded)	Disk	N
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0351-01-Ma	0.73803	Subrounded (Rounded)	Disk	F
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0351-02-Ma	0.69862	Subrounded (Rounded)	Sphere	O
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GP from 0.5-1.0 mm fraction is rounded, second-cycle grain (ODM KIM Comment)

Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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0381-01-Ma	0.68859	Subrounded (Rounded)	Blade	E
0381-02-Ma	0.62633	Subrounded	Blade	E

0417-Ma	No Data	No Data	No Data	No Data
1 IM grain exsolved (OGL Comment)				

0439-Ma	No Data	No Data	No Data	No Data
CR is a rounded, second-cycle grain (ODM KIM Comment)				

0443-01-Ma	0.55904	Subrounded	Roller	F
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0445-01-Ma	0.456	Subangular (Subrounded)	Roller	M
0445-02-Ma	0.6428	Subrounded	Blade	K

0461-01-Ma	0.6689	Subrounded	Disk	F
0461-02-Ma	0.62472	Subrounded	Disk	M
0461-03-Ma	0.5805	Subrounded (Subangular)	Blade	

0467-01-Ma	0.52044	Subrounded (Subangular)	Blade	G
0467-02-Ma	0.62939	Subrounded	Blade	G
0467-03-Ma	0.7603	Rounded (Subrounded)	Disk	M

0471-01-Ma	0.5676	Subrounded (Subangular)	Blade	G
0471-02-Ma	0.46548	Subangular (Subrounded)	Roller	L

0479-02-Ma	0.59914	Subrounded	Blade	G
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0481-02-Ma	0.63727	Subrounded	Blade	H
1, 2nd cycle IM (ODM KIM Comment)				

0489-01-Ma	0.67027	Subrounded (Rounded)	Blade	G
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0597-01-Ma	0.5791	Subrounded (Subangular)	Blade	N
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Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
0641-Ma	No Data	No Data	No Data	
4 IM grains exsolved (OGL Comment)				
0657-Ma	No Data	No Data	No Data	
1 IM grain exsolved, 1 IM very pitted (OGL Comment)				
0665-01-Ma	0.75017	Rounded (Subrounded)	Disk	F
0732-01-Ma	0.59222	Subrounded	Blade	G
GP internally fractured and has a partial kelyphite mantle (ODM KIM Comment)				
0736-01-Ma	0.69627	Subrounded (Rounded)	Disk	G
1004-01-Ma	0.68632	Subrounded (Rounded)	Blade	A
1004-02-Ma	0.42983	Subangular (Subrounded)	Disk	O
Cr grain angular, suggesting local source (ODM Cover Letter Comment)				
1018-Ma	No Data	No Data	No Data	
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				
1030-Ma	No Data	No Data	No Data	
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				
1038-Ma	No Data	No Data	No Data	
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				
1048-05-Ma	0.67867	Subrounded (Rounded)	Disk	B
1072-Ma	No Data	No Data	No Data	
1 IM grain exsolved (OGL Comment)				
1075-12-Ma	0.41417	Subangular	Blade	A
1075-13-Ma	0.75594	Rounded (Subrounded)	Disk	I
1098-02-Ma	0.38231	Subangular	Roller	H

Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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1132-01-Ma	0.57164	Subrounded (Subangular)	Blade	A
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1140-01-Ma	0.63543	Subrounded	Disk	A
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1140-01-Ma	0.68364	Subrounded (Rounded)	Disk	A
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1142-01-Ma	0.50941	Subrounded (Subangular)	Blade	B
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1142-02-Ma	0.65179	Subrounded	Blade	H
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1 IM grain exsolved (OGL Comment)

1144-01-Ma	No Data	No Data	No Data	
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1144-02-Ma	0.72343	Subrounded (Rounded)	Disk	N
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1172-01-Ma	0.69334	Subrounded (Rounded)	Disk	C
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1315-01-Ma	0.67671	Subrounded (Rounded)	Disk	F
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1330-03-Ma	0.40923	Subangular	Roller	F
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1330-04-Ma	0.58692	Subrounded	Disk	F
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1330-05-Ma	0.66931	Subrounded	Disk	H
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1330-06-Ma	0.43689	Subangular (Subrounded)	Blade	H
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1330-06-Ma	0.41335	Subangular	Blade	H
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1330-07-Ma	0.58718	Subrounded	Blade	I
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1330-08-Ma	0.6619	Subrounded	Disk	K
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1330-09-Ma	0.72167	Subrounded (Rounded)	Blade	K
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1330-10-Ma	0.51868	Subrounded (Subangular)	Blade	O
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All KIMs are primary cycle grains, local source. Almandines are second cycle, worn, transported (ODM Cover Letter Comment)

1 IM very pitted, 16 IM grains exsolved (OGL Comment)

1333-02-Ma	0.7319	Subrounded (Rounded)	Disk	F
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1333-03-Ma	0.58282	Subrounded (Subangular)	Blade	E
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1333-04-Ma	0.52101	Subrounded (Subangular)	Blade	I
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1333-05-Ma	0.60712	Subrounded	Blade	I
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Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
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1333-06-Ma	0.49139	Subangular (Subrounded)	Blade	I
1333-07-Ma	0.70278	Subrounded (Rounded)	Blade	J
1333-08-Ma	0.62365	Subrounded	Blade	K

1335-01-Ma	0.71129	Subrounded (Rounded)	Disk	L
1335-02-Ma	0.62646	Subrounded	Disk	L

3 IM grains exsolved (OGL Comment)

1340-01-Ma	0.62683	Subrounded	Blade	E
1340-02-Ma	0.53523	Subrounded (Subangular)	Blade	J
1340-03-Ma	0.45596	Subangular (Subrounded)	Blade	J
1340-04-Ma	0.42267	Subangular (Subrounded)	Blade	J
1340-05-Ma	0.66544	Subrounded	Disk	L
1340-06-Ma	0.50253	Subrounded (Subangular)	Disk	L

1345-01-Ma	0.71596	Subrounded (Rounded)	Disk	E
1345-02-Ma	0.6862	Subrounded (Rounded)	Disk	K

1349-01-Ma	0.3706	Subangular	Roller	E
1349-02-Ma	0.61332	Subrounded	Blade	K

1353-02-Ma	0.63648	Subrounded	Disk	E
1353-03-Ma	0.59818	Subrounded	Blade	E
1353-04-Ma	0.69233	Subrounded (Rounded)	Disk	E
1353-05-Ma	0.74457	Subrounded (Rounded)	Disk	E
1353-06-Ma	0.55558	Subrounded (Subangular)	Blade	E
1353-07-Ma	No Data	No Data	No Data	
1353-08-Ma	0.66179	Subrounded	Blade	K
1353-09-Ma	0.33103	Subangular (Angular)	Roller	K
1353-10-Ma	0.55987	Subrounded (Subangular)	Disk	L

All inclusions are fresh primary grains (DC) (ODM KIM Comment)

1362-02-Ma	0.56096	Subrounded (Subangular)	Roller	K
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0690-01-Ma	0.66855	Subrounded	Disk	G
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Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
0093-01-Tm	0.5298	Subrounded (Subangular)	Blade	A
Cr Grains angular, suggesting local source (ODM Cover Letter Comment)				
0213-Tm	No Data	No Data	No Data	
2 of 5 IM grains very pitted (OGL Comment)				
0253-01-Tm	0.53143	Subrounded (Subangular)	Blade	D
0253-02-Tm	0.70924	Subrounded (Rounded)	Disk	K
0253-03-Tm	0.9292	Rounded (Very Rounded)	Sphere	K
0537-01-Tm	0.62838	Subrounded	Blade	M
0537-02-Tm	0.61008	Subrounded	Disk	O
2 of 4 grains exsolved (OGL Comment)				
0623-01-Tm	0.64632	Subrounded	Blade	E
0730-01-Tm	0.53816	Subrounded (Subangular)	Blade	G
0730-02-Tm	0.62846	Subrounded	Blade	M
1011-Tm	No Data	No Data	No Data	
Cr, IM grains angular, suggesting local source (ODM Cover Letter)				
1016-Tm	No Data	No Data	No Data	
Low Cr-diopside and diopside occur as sharply angular, some with alteration mantle, suggests local source (ODM KIM Comment)				
Cr, IM grains angular, suggesting local source (ODM Cover Letter Comment)				
1 IM exsolved (OGL Comment)				
1025-Tm	No Data	No Data	No Data	
Low Cr-diopside similar to that of TM-01-1016, also contains similar pale green to colourless diopside(ODM KIM Comment)				
1036-Tm	No Data	No Data	No Data	
Cr Grains angular, suggesting local source (ODM Cover Letter Comment)				
1 IM exsolved (OGL Comment)				

Appendix 3: Summary of Cr-pyrope Grain Physical Features (Continued)

Sample/ Grain Number	Garnet Roundness	Garnet Roundness Classification	Garnet Sphericity Classification	Related Photo (see Appendix 12, Morris 2002)
1064-01-Tm	0.74974	Subrounded (Rounded)	Blade	A
1064-01-Tm	0.76751	Rounded (Subrounded)	Blade	A
1124-01-Tm	0.53515	Subrounded (Subangular)	Roller	A
1157-01-Tm	0.51655	Subrounded (Subangular)	Blade	C
1170-01-Tm	0.56907	Subrounded (Subangular)	Disk	C
1170-02-Tm	0.84376	Rounded	Sphere	H
1370-01-Tm	0.54275	Subrounded (Subangular)	Blade	O
1373-01-Tm	0.58834	Subrounded	Blade	F
0702-01-Tm	0.71204	Subrounded (Rounded)	Disk	N
2040-01-Es	0.6544	Subrounded	Blade	F
2056-01-Es	0.54707	Subrounded (Subangular)	Disk	K
2056-02-Es	0.56721	Subrounded (Subangular)	Disk	L
1393-Gf	No Data	No Data	No Data	
1 Cr grain very pitted (OGL Comment)				
2018-01-Gf	0.53359	Subrounded (Subangular)	Blade	F
2046-01-Mr	0.69239	Subrounded (Rounded)	Disk	G
2046-01-Mr	0.67791	Subrounded (Rounded)	Disk	G

Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	Multiplied by	Gives	Imperial Unit	Multiplied by	Gives
LENGTH					
1 mm	0.039 37	inches	1 inch	25.4	mm
1 cm	0.393 70	inches	1 inch	2.54	cm
1 m	3.280 84	feet	1 foot	0.304 8	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	1.609 344	km
AREA					
1 cm ²	0.155 0	square inches	1 square inch	6.451 6	cm ²
1 m ²	10.763 9	square feet	1 square foot	0.092 903 04	m ²
1 km ²	0.386 10	square miles	1 square mile	2.589 988	km ²
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
VOLUME					
1 cm ³	0.061 023	cubic inches	1 cubic inch	16.387 064	cm ³
1 m ³	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m ³
1 m ³	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m ³
CAPACITY					
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	4.546 090	L
MASS					
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	31.103 476 8	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	0.453 592 37	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	907.184 74	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	0.907 184 74	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	1016.046 908 8	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	1.016 046 90	t
CONCENTRATION					
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.